61283

Access DB# ___________

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: My-Chau Tran Examiner # : 78933 Date: 2/27/02
Art Unit: 1641 Phone Number 30 5-6999 Serial Number: 09/739,940
Mail Box and Bldg/Room Location: CM1, 8A16 Results Format Preferred (circle): PAPER DISK E-MAIL
9E12

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Deposited thin films and their use in detection, attachment, and bio-medical applications

Inventors (please provide full names): Stephen J. Fonash, Sanghoon Bae, Daniel J. Hayes

Earliest Priority Filing Date: 6/3/1999.

****For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.***

Please performs: 1) Inventor search and 2) claim attached below w/ the following key words:

a) a columnar-void fil
b) time of flight mass spectrosco
c) proteins
d) lipids

Thank-you

Inventor Search

Tran 09/739,940

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=> fil biosis hcaplus wpids
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FILE 'HCAPLUS' ENTERED AT 12:59:09 ON 04 MAR 2002
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FILE 'WPIDS' ENTERED AT 12:59:09 ON 04 MAR 2002
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L1          273 SEA ("FONASH S"/AU OR "FONASH S J"/AU OR "FONASH STEPHEN"/AU
                OR "FONASH STEPHEN J"/AU OR "FONASH STEPHEN JOSEPH"/AU)
L2         1123 SEA ("BAE S"/AU OR "BAE S A"/AU OR "BAE S B"/AU OR "BAE S
                C"/AU OR "BAE S D"/AU OR "BAE S E"/AU OR "BAE S G"/AU OR "BAE
                S H"/AU OR "BAE S I"/AU OR "BAE S J"/AU OR "BAE S K"/AU OR
                "BAE S L"/AU OR "BAE S M"/AU OR "BAE S N"/AU OR "BAE S O"/AU
                OR "BAE S P"/AU OR "BAE S R"/AU OR "BAE S S"/AU OR "BAE S
                T"/AU OR "BAE S U"/AU OR "BAE S W"/AU OR "BAE S Y"/AU)
L3           27 SEA "BAE SANG HOON"/AU OR "BAE SANGHOON"/AU
L4          278 SEA "HAYES D"/AU OR ("HAYES D J"/AU OR "HAYES D J B"/AU OR
                "HAYES D J BOUCHIER"/AU)
L5           18 SEA "HAYES DANIEL"/AU OR "HAYES DANIEL J"/AU
L6         1684 SEA (L1 OR L2 OR L3 OR L4 OR L5)



     (FILE 'BIOSIS, HCAPLUS, WPIDS' ENTERED AT 12:50:23 ON 04 MAR 2002)
L7       221689 S THIN (3A) FILM#
L8           68 S L6 AND L7
L9          290 S COLUMN? (3A) VOID?
L10           3 S L8 AND L9
L11     1193285 S FILM#
L12         144 S L6 AND L11
L13           3 S L9 AND L12
L14           3 S L10 OR L13
L15      174277 S MASS (3A) (SPECTROSC? OR SPECTROMET?)
L16       13437 S TIME (3A) FLIGHT
L17        7728 S L15 AND L16
L18           3 S L17 AND L12
L19           5 S L18 OR L14
L20           4 S L12 AND L15
L21           6 S L19 OR L20
L22     2414171 S ANALYSIS
L23      764029 S SAMPLE# OR ANALYTE#
L24           6 S L12 AND L22
L25           1 S L12 AND L23
L26           9 S L21 OR L24 OR L25
L27           7 DUP REM L26 (2 DUPLICATES REMOVED)

     FILE 'BIOSIS, HCAPLUS, WPIDS' ENTERED AT 12:59:09 ON 04 MAR 2002

=> d bib ab it 1-7

L27  ANSWER 1 OF 7  HCAPLUS  COPYRIGHT 2002 ACS        DUPLICATE 1
AN   2001:472965  HCAPLUS
DN   135:70310
```

TI Deposited thin **films** and their use in detection, attachment, and bio-medical applications
IN **Fonash, Stephen J.; Bae, Sanghoon; Hayes, Daniel J.**; Cuiffi, Joseph
PA Penn State Research Foundation, USA
SO PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001046458	A1	20010628	WO 2000-US34411	20001219

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	US 2002020053	A1	20020221	US 2001-836449	20010417
PRAI	US 1999-172840	P	19991220		
	US 2000-201936	P	20000505		
	US 2000-201937	P	20000505		
	US 2000-580105	A	20000530		
	US 2000-231474	P	20000908		
	US 2000-197548	P	20000417		
	US 2000-208197	P	20000531		
	US 2000-215538	P	20000630		
	US 2000-231626	P	20000911		
	US 2000-235794	P	20000927		
	US 2001-268208	P	20010212		

AB The present invention is directed to the use of deposited thin films for chem. or biol. anal. The invention further relates to the use of these thin films in sepn., adherence and detection of chem. or biol. samples. Applications of these thin films include desorption-ionization mass spectroscopy, elec. contacts for org. thin films and mols., optical coupling of light energy for anal., biol. materials manipulation, chromatog. sepn., head space adsorbance media, media for at. mol. adsorbance or attachment, and substrates for cell attachment.

IT Atomic force microscopy
Biochemical molecules
Biological materials
Capillary electrophoresis
Cell
Colorimetry
Desorption **mass spectrometry**
Films
Gas chromatography
Glass substrates
Liquid chromatography
Microorganism
Semiconductor **films**
Spectroscopy
Time-of-**flight mass spectrometry**
(deposited thin **films** and use in detection, attachment, and bio-medical applications)

IT Carbohydrates, **analysis**

Inorganic compounds
Lipids, **analysis**
Nucleic acids
Organic compounds, **analysis**
Peptides, **analysis**
Proteins, general, **analysis**
RL: ANT (Analyte); ANST (Analytical study)
(deposited thin **films** and use in detection, attachment, and bio-medical applications)

IT Ceramics
(substrates; deposited thin **films** and use in detection, attachment, and bio-medical applications)

IT Metals, uses
Plastics, uses
Polymers, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(substrates; deposited thin **films** and use in detection, attachment, and bio-medical applications)

IT 7632-50-0, Ammonium citrate
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enhancer; deposited thin **films** and use in detection, attachment, and bio-medical applications)

IT 7440-21-3, Silicon, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(substrate; deposited thin **films** and use in detection, attachment, and bio-medical applications)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:101577 HCAPLUS
DN 134:233850
TI Desorption-ionization **mass spectrometry** using deposited nanostructured silicon **films**
AU Cuiffi, Joseph D.; **Hayes, Daniel J.**; **Fonash, Stephen J.**; Brown, Kwanza N.; Jones, Arthur D.
CS Nanofabrication Facility, The Pennsylvania State University, University Park, PA, 16802, USA
SO Anal. Chem. (2001), 73(6), 1292-1295
CODEN: ANCHAM; ISSN: 0003-2700
PB American Chemical Society
DT Journal
LA English
AB We present a method for desorption ionization on silicon based on novel column/void-network-deposited silicon thin films. A no. of different peptides and proteins in the .ltoreq.6000 Daltons range are analyzed by time-of-flight mass spectrometry in this demonstration of our approach. A variety of sample prepn. conditions, including the use of chem. additives, surface treatments, and sample purifn. are used to show the potential of mass anal. using deposited column/void-network silicon films for high throughput proteomic screening.

IT **Time-of-flight mass spectrometry**
Ultrathin **films**
(desorption-ionization **mass spectrometry** using deposited nanostructured silicon **films**)

IT Peptides, **analysis**
Proteins, general, **analysis**
RL: ANT (Analyte); ANST (Analytical study)
(desorption-ionization **mass spectrometry** using deposited nanostructured silicon **films**)

IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(desorption-ionization **mass spectrometry** using
deposited nanostructured silicon **films**)
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(desorption-ionization **mass spectrometry** using
deposited nanostructured silicon **films**)
IT Vapor deposition process
(plasma; desorption-ionization **mass spectrometry**
using deposited nanostructured silicon **films**)
IT 58-82-2, Bradykinin 9007-12-9, Thyrocalcitonin
RL: ANT (Analyte); ANST (Analytical study)
(desorption-ionization **mass spectrometry** using
deposited nanostructured silicon **films**)
IT 25038-59-9, Poly(ethylene terephthalate), uses
RL: DEV (Device component use); USES (Uses)
(desorption-ionization **mass spectrometry** using
deposited nanostructured silicon **films**)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(desorption-ionization **mass spectrometry** using
deposited nanostructured silicon **films**)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 2
AN 2000:881078 HCAPLUS
DN 134:50098
TI Deposited **thin film void-column**
network materials
IN **Fonash, Stephen J.**; Kalkan, Ali Kaan; **Bae, Sanghoon**
PA The Penn State Research Foundation, USA
SO PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000074932	A1	20001214	WO 2000-US14862	20000530

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,
CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 1999-137385 P 19990603
US 1999-139608 P 19990617
US 1999-151848 P 19991027

AB A novel porous film (3) is disclosed comprising a network of silicon columns in a continuous void which may be fabricated using high d. plasma deposition at low temps., i.e., .ltorsim.250 >C. This silicon film is a two-dimensional nano-sized array of rodlike columns. This void-column morphol. can be controlled with deposition conditions and the porosity can be varied up to 90%. The simultaneous use of low temp. deposition and

etching in the plasma approach used, allows for the unique opportunity of obtaining columnar structure, a continuous void, and polycryst. column compn. at the same time. Unique devices may be fabricated using this porous continuous film by plasma deposition of this film on a glass, metal foil, insulator or plastic substrates.

IT Amorphous materials
Coating materials
Crystal growth apparatus
Electric insulators
Etching
Ferroelectric materials
Piezoelectric materials
Polycrystalline materials
Porous materials
Semiconductor materials
(high d. plasma deposition of **thin film void-column** network materials for semiconductor device fabrication)

IT Vapor deposition process
(plasma; high d. plasma deposition of **thin film void-column** network materials for semiconductor device fabrication)

IT 7440-21-3P, Silicon, properties 7631-86-9P, Silica, properties 12033-89-5P, Silicon nitride, properties
RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(high d. plasma deposition of **thin film void-column** network materials for semiconductor device fabrication)

IT 7647-01-0, Hydrogen chloride, reactions 7664-39-3, Hydrogen fluoride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(high d. plasma deposition of **thin film void-column** network materials for semiconductor device fabrication)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:427563 HCAPLUS
DN 133:143259
TI Nanocrystalline silicon **thin films** with arrayed **void-column** network deposited by high density plasma
AU Kaan Kalkan, A.; **Bae, Sanghoon**; Li, Handong; **Hayes, Daniel J.**; **Fonash, Stephen J.**
CS Electronic Materials and Processing Research Laboratory, The Pennsylvania State University, University Park, PA, 16802, USA
SO J. Appl. Phys. (2000), 88(1), 555-561
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
AB High-porosity nanocryst. Si thin films have been deposited using a high d. plasma approach at temps. as low as 100.degree.. These films exhibit the same unique properties, such as visible luminescence and gas sensitivity, that are seen in electrochem. etched Si (i.e., porous Si). The nanostructure consists of an array of rodlike columns normal to the substrate surface situated in a void matrix. The authors have demonstrated that this structure is fully controllable and have varied the

porosity up to .apprx.90% (as derived from optical reflectance) by varying the deposition conditions. In particular, the impact of plasma power has been found to reduce porosity by increasing the nuclei d. and therefore the areal d. of columns. Humidity sensors have been demonstrated based on the enhanced cond. of the authors' films (up to 6 orders of magnitude) in response to an increase in relative humidity. Depending on the porosity, the cond.-relative humidity behavior of their films shows variations that can be correlated with the nanostructure. Also, these variations indicate that the dominant charge transport is limited by the dissocn. of water into its ions at the column surfaces.

IT Nanocrystalline materials
(nanocryst. silicon **thin films** with arrayed **void-column** network deposited by high d. plasma)

IT Vapor deposition process
(plasma; nanocryst. silicon **thin films** with arrayed **void-column** network deposited by high d. plasma)

IT 7440-21-3, Silicon, properties
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(nanocryst. silicon **thin films** with arrayed **void-column** network deposited by high d. plasma)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:491607 HCAPLUS
DN 131:219517
TI On the **Analysis** of Ellipsometric Measurements of Adsorption Layers at Fluid Interfaces
AU Teppner, R.; **Bae, S.**; Haage, K.; Motschmann, H.
CS Max-Planck Institute of Colloids and Interfaces, Golm, D-15576, Germany
SO Langmuir (1999), 15(20), 7002-7007
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English

AB Ellipsometry is a well-established, nondestructive optical method for the characterization of thin films. An ellipsometric expt. yields in the thin film limit only a single parameter .eta., which is related to changes in the state of polarization caused by reflection. The ellipsometric quantity is only subject to certain conditions proportional to the adsorbed amt. .GAMMA.. The necessary requirements leading to the proportionably are not met for adsorption layers of sol. surfactants at the air-water interface since the dielec. consts. .epsilon. of all media are very similar. It is not possible to establish from first principles (Maxwells equations) a unique relation between state of the monolayer and .eta.. The derived expression cannot be inverted, and it is not justified to assume a linear relation between .eta. and the surface excess .GAMMA.. The aim of this contribution is to obtain an understanding what .eta. represents for sol. surfactants at the air-water interface. For the purpose of this study a sol. surfactant was designed which possesses a sufficiently high hyperpolarizability to enable surface second harmonic generation (SHG) in reflection mode to be performed. Polarization dependent SHG measurements were used to det. the orientation, the surface excess, and the symmetry of the interface. These data were used to assess the meaning of ellipsometric measurements. The comparison reveals that the relation between surface coverage and ellipsometric signal is nonlinear. The ellipsometric isotherm increases at low concn. and possesses a max. at an intermediate coverage and then even decreases with increasing surface excess. These features can be understood in terms of

changes in the orientation of the aliph. tails of the amphiphile and by the prevailing ion distribution at the interface. Ellipsometry is therefore not a suitable alternative to surface tension measurements, neutron reflectometry, or nonlinear optical investigations for the detn. of the surface excess of sol. surfactants although it is convenient technique to characterize qual. local and temporal variations of the mol. d. at fluid interfaces.

IT Interface
(air/water; **anal**. of ellipsometric measurements of adsorption layers at fluid interfaces)
IT Adsorbed substances
(**anal**. of ellipsometric measurements of adsorption layers at fluid interfaces)
IT Amphiphiles
(cationic; changes in orientation of aliph. tails of amphiphile surfactants an prevailing ion distribution at interface)
IT Molecular orientation
Surfactants
(changes in orientation of aliph. tails of amphiphile surfactants an prevailing ion distribution at interface)
IT **Films**
(characterization of thin **films** at air/water interface)
IT Ellipsometry
(isotherm; **anal**. of ellipsometric measurements of adsorption layers at fluid interfaces)
IT Surface tension
(use of ellipsometry for surface tension measurements)
IT 110393-89-0, 1-Dodecyl-4-dimethylaminopyridinium bromide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(changes in orientation of aliph. tails of amphiphile surfactants an prevailing ion distribution at interface)
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:41170 HCAPLUS
DN 134:230215
TI **Analysis** of evolution to and beyond quasi-breakdown in ultra-thin oxide and oxynitride
AU Okandan, Murat; **Fonash, Stephen J.**; Maiti, Bikas; Tseng, H. H.; Tobin, Phil
CS The Pennsylvania State University, USA
SO IEEE Int. Integr. Reliab. Workshop Final Rep., 18th (1999), 111-113
Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 69AVDZ
DT Conference
LA English
AB A detailed anal. is presented of CMOS transistors with 30 .ANG. oxide and oxynitride dielecs. as they evolve to and beyond quasi-breakdown due to Fowler-Nordheim (FN) stresses. Subsequent anneals and stresses were also performed to simulate the effects of further processing. Devices with ultrathin dielecs. behaved similar to devices with thicker dielecs. until quasi-breakdown. The device behavior is unpredictable after the quasi-breakdown event, even though the devices continue to operate.
IT MOS transistors
(complementary; evolution to and beyond quasi-breakdown in ultrathin oxide and oxynitride in CMOS transistors)
IT Annealing

```
      Dielectric films
      Electric breakdown
      Electric current-potential relationship
      Leakage current
      Ultrathin films
         (evolution to and beyond quasi-breakdown in ultrathin oxide and
         oxynitride in CMOS transistors)
IT    7440-21-3, Silicon, uses   7631-86-9, Silica, uses
      RL: DEV (Device component use); USES (Uses)
         (evolution to and beyond quasi-breakdown in ultrathin oxide and
         oxynitride in CMOS transistors)
RE.CNT  4      THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27   ANSWER 7 OF 7  HCAPLUS  COPYRIGHT 2002 ACS
AN    1998:740137  HCAPLUS
DN    130:31541
TI    Low temperature, high quality silicon dioxide thin films
      deposited using tetramethylsilane (TMS)
AU    Reber, D. M.; Fonash, S. J.
CS    Electronic Materials and Processing Research Laboratory (EMPRL), The
      Pennsylvania State University, University Park, PA, 16802, USA
SO    Mater. Res. Soc. Symp. Proc. (1998), 508(Flat-Panel Display
      Materials--1998), 120-126
      CODEN: MRSPDH; ISSN: 0272-9172
PB    Materials Research Society
DT    Journal
LA    English
AB    Silicon dioxide thin films have been deposited at temps. from 40.degree.C
      to 250.degree.C by plasma enhanced chem. vapor deposition (PECVD) using
      tetramethylsilane (TMS) as the silicon contg. precursor.  The properties
      of the PECVD TMS oxides (PETMS-Oxs) were analyzed with Fourier Transform
      IR (FTIR) transmission spectroscopy, BOE and P-etch rates and both
      current-voltage (I-V) and capacitance-voltage (C-V) elec.
      characterization.  At both 130 .degree.C and 250 .degree.C, deposition
      conditions were identified which formed high quality as-deposited oxide
      films.  Under the best conditions, unannealed Al/PETMS-Ox/c-Si capacitor
      structures displayed flat band voltages of Vfb .apprxeq. 2.5 V and
      breakdown fields (Vbd) in excess of 8 MV/cm.  These PETMS-Ox films also
      show low leakage current densities <10-9 A/cm2 which can be maintained up
      to fields in excess of 4.5 MV/cm.  The PETMS oxide elec. quality and
      process simplicity combine to make a very attractive oxide deposition
      technol. for low temp., large area applications.
IT    FTIR spectroscopy
         (anal. of properties of PECVD tetramethylsilane oxide with
         Fourier Transform IR transmission spectroscopy)
IT    Electric capacitance-potential relationship
         (anal. of properties of PECVD tetramethylsilane oxide with
         capacitance-voltage elec. characterization)
IT    Electric current-potential relationship
         (anal. of properties of PECVD tetramethylsilane oxide with
         current-potential relationship)
IT    Plasma chemical vapor deposition
         (deposition of silicon dioxide thin films at 40.degree.-
         250.degree.C by plasma enhanced chem. vapor deposition using
         tetramethylsilane as silicon contg. precursor)
IT    Semiconductor films
         (low temp. high quality silicon dioxide thin films deposition
         using tetramethylsilane)
IT    78-10-4
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     RL: PRP (Properties)
        (anal. of properties of PECVD tetramethylsilane oxide with
        Fourier Transform IR transmission spectroscopy)
IT   7631-86-9, Silicon dioxide, uses
     RL: DEV (Device component use); USES (Uses)
        (low temp. high quality silicon dioxide thin films deposition
        using tetramethylsilane)
IT   75-76-3, Tetramethylsilane
     RL: RCT (Reactant)
        (low temp. high quality silicon dioxide thin films deposition
        using tetramethylsilane)
RE.CNT  8      THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT
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=> d his

     (FILE 'HCAPLUS' ENTERED AT 12:27:15 ON 04 MAR 2002)
                DEL HIS Y
L1        121430 S THIN (L) FILM#
L2            23 S (COLUM? (2W) VOID)
L3             0 S (COLUM? (2W) VOID)/AV
L4           153 S (COLUM? (2W) VOID)/AB
L5           164 S L2 OR L4
L6             6 S L5 AND L1
L7         28147 S MASS  SPECTROSC?
L8           530 S L7 (L) TIME (2A) FLIGHT
L9             7 S L8 AND L1
L10          210 S L7 AND L1
L11        38693 S BIOMEDICAL? OR BIO MEDICAL OR MEDICAL?
L12            0 S L11 AND L10
L13           61 S L11 AND L1
L14      1187417 S ANALYSIS
L15            5 S L13 AND L14
L16        15543 S BIOMATERIAL? OR BIOLOG? MATERIAL#
L17            2 S L16 AND L13
L18           19 S L6 OR L9 OR L15 OR L17
L19      1185420 S LIPID# OR PROTEIN#
L20            0 S L10 AND L19
L21          273 S L1 AND L19
L22        55179 S L19 (L) ANALYSIS
L23           42 S L22 AND L21
L24        98065 S SAMPLE# OR ANALYTE?
L25            6 S L23 AND L24
L26           25 S L25 OR L18

=> d .ca l26 1-25

L26  ANSWER 1 OF 25  HCAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:         2001:776715  HCAPLUS
TITLE:                    Deposited thin films and their use
                          in separation and sarcrificial layer applications
INVENTOR(S):              Fonash, Stephen J.; Kalkan, Ali Kaan; Bae,
                          Sanghoon; Hayes, Dan; Nam, Wook Jun; Chang,
                          Kyuhwan; Lee, Youngchul
PATENT ASSIGNEE(S):       The Penn State Research Foundation, USA
SOURCE:                   PCT Int. Appl.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   2
PATENT INFORMATION:

     PATENT NO.       KIND  DATE          APPLICATION NO.  DATE
     ---------------  ----  --------      ---------------  --------
     WO 2001080286     A2   20011025      WO 2001-US12281  20010417
     WO 2001080286     A3   20020207
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
             HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
             LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
             SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
             ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
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        BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
    US 2002020053      A1    20020221         US 2001-836449    20010417
PRIORITY APPLN. INFO.:                     US 2000-197548    P  20000417
                                           US 2000-201937    P  20000505
                                           US 2000-580105    A  20000530
                                           US 2000-208197    P  20000531
                                           US 2000-215538    P  20000630
                                           US 2000-231626    P  20000911
                                           US 2000-235794    P  20000927
                                           US 2000-739940    A  20001219
                                           US 2001-268208    P  20010212
                                           US 1999-172840    P  19991220
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AB This invention uses large surface to volume ratio materials for separation, release layer, and sacrificial material applications. The invention outlines the material concept, application designs, and fabrication methodologies. The invention is demonstrated using deposited **column/void** network materials as examples of large surface to volume ratio materials. In a number of the specific applications discussed, it is shown that it is advantageous to create structures on a laminate on a mother substrate and then, using the separation layer material approach, to separate this laminate from the mother substrate using the present separation scheme. It is also shown that the present materials have excellent release layer utility. In a number of applications it is also shown how the approach can be used to uniquely form cavities, channels, air-gaps, and related structures in or on various substrates. Further, it is demonstrated that it also can be possible and advantageous to combine the schemes for cavity formation with the scheme for laminate separation.

IC ICM H01L

L26 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:472965 HCAPLUS
DOCUMENT NUMBER: 135:70310
TITLE: Deposited **thin films** and their use in detection, attachment, and **bio-medical** applications
INVENTOR(S): Fonash, Stephen J.; Bae, Sanghoon; Hayes, Daniel J.; Cuiffi, Joseph
PATENT ASSIGNEE(S): Penn State Research Foundation, USA
SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

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    PATENT NO.        KIND  DATE          APPLICATION NO.   DATE
    ---------------   ----  --------      ---------------   --------
    WO 2001046458      A1    20010628     WO 2000-US34411   20001219
        W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
            CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
            HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
            LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
            SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
            ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
            DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
            BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
    US 2002020053      A1    20020221      US 2001-836449    20010417
PRIORITY APPLN. INFO.:                     US 1999-172840    P  19991220
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US 2000-201936 P 20000505
US 2000-201937 P 20000505
US 2000-580105 A 20000530
US 2000-231474 P 20000908
US 2000-197548 P 20000417
US 2000-208197 P 20000531
US 2000-215538 P 20000630
US 2000-231626 P 20000911
US 2000-235794 P 20000927
US 2001-268208 P 20010212

AB The present invention is directed to the use of deposited thin films for chem. or biol. anal. The invention further relates to the use of these thin films in sepn., adherence and detection of chem. or biol. samples. Applications of these thin films include desorption-ionization mass spectroscopy, elec. contacts for org. thin films and mols., optical coupling of light energy for anal., biol. materials manipulation, chromatog. sepn., head space adsorbance media, media for at. mol. adsorbance or attachment, and substrates for cell attachment.

IC ICM C12Q001-00
ICS G01N033-53; G01N033-567; G01N015-06; G01N033-00; G01N033-48; G01N027-00; G01N021-29; G01N021-41; G01N021-47

CC 80-3 (Organic Analytical Chemistry)
Section cross-reference(s): 9

ST deposited **thin film** attachment bio

IT Atomic force microscopy
Biochemical molecules
Biological materials
Capillary electrophoresis
Cell
Colorimetry
Desorption mass spectrometry
Films
Gas chromatography
Glass substrates
Liquid chromatography
Microorganism
Semiconductor **films**
Spectroscopy
Time-of-flight mass spectrometry
(deposited **thin films** and use in detection, attachment, and **bio-medical** applications)

IT Carbohydrates, **analysis**
Inorganic compounds
Lipids, **analysis**
Nucleic acids
Organic compounds, **analysis**
Peptides, **analysis**
Proteins, general, **analysis**
RL: ANT (Analyte); ANST (Analytical study)
(deposited **thin films** and use in detection, attachment, and **bio-medical** applications)

IT Ceramics
(substrates; deposited **thin films** and use in detection, attachment, and **bio-medical** applications)

IT Metals, uses
Plastics, uses
Polymers, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(substrates; deposited **thin films** and use in

detection, attachment, and **bio-medical**
applications)
IT 7632-50-0, Ammonium citrate
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enhancer; deposited **thin films** and use in
detection, attachment, and **bio-medical**
applications)
IT 7440-21-3, Silicon, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(substrate; deposited **thin films** and use in
detection, attachment, and **bio-medical**
applications)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:413420 HCAPLUS
DOCUMENT NUMBER: 135:151828
TITLE: Application of nonporous polyurethane (PU) membranes and porous PU **thin films** as **sample** supports for MALDI-MS of wheat **proteins**
AUTHOR(S): McComb, Mark E.; Oleschuk, Richard D.; Chow, Art; Perreault, Helene; Dworschak, Ragnar G.; Znamirowski, Marek; Ens, Werner; Standing, Kenneth G.; Preston, Ken R.
CORPORATE SOURCE: Department of Chemistry, University of Manitoba, Winnipeg, MB, R3T 2N2, Can.
SOURCE: Can. J. Chem. (2001), 79(4), 437-447
CODEN: CJCHAG; ISSN: 0008-4042
PUBLISHER: National Research Council of Canada
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Non-porous polyurethane (PU) membranes and porous PU thin films are used as sample supports for MALDI-TOFMS. Mass spectra obtained are compared with those acquired using metal targets and the crushed matrix method. The compds. characterized are wheat proteins which consist of moderately water-sol. gliadins, and of water-insol. low mol. wt. (LMW) and high mol. wt. (HMW) glutenins. Mass spectra obtained using the PU supports are in general of good quality, and this method of sample prepn. is the most convenient for sample handling. In the case of gliadins and LMW glutenins, the spectra obtained on PU are comparable with those obtained using metal supports. Isolation of the LMW and HMW wheat proteins characterized in this study requires the use of buffers incompatible with MALDI. Spectra of samples contg. buffer components on PU supports are of better quality than those obtained using the crushed matrix method. This effect is attributed to stronger protein binding onto the PU supports, which allows for extensive washing and removal of water sol. buffer components. The PU film, when cast onto a MALDI probe, is porous and flat in topol. The differences in surface characteristics between the PU film and the PU membrane result in slight variations in the mass spectra. The extent of surface charging, obsd. significantly using 50 .mu.m thick PU membranes, decreases with 25 .mu.m membranes and becomes insignificant with PU thin films. An important advantage of using the PU supports is the possibility of prepg. samples on the film or membrane in the field and of analyzing them at a later time. This is esp. important when samples are susceptible to chem. degrdn. in soln. These proteins are known to degrade while stored in soln. The authors have thus incorporated the use of PU membrane-film supports into our routine anal. of these proteins.
CC 17-1 (Food and Feed Chemistry)

ST wheat **protein** polyurethane membrane support MALDI TOF MS
IT Polyurethanes, **analysis**
RL: ARU (Analytical role, unclassified); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(XP625-FS; nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
IT Membranes, nonbiological
Sample preparation
Time-of-flight mass spectrometry
Wheat
(nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
IT Gliadins
Glutenins
RL: ANT (Analyte); ANST (Analytical study)
(nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
IT Laser ionization mass spectrometry
(photodesorption, matrix-assisted; nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
IT Laser desorption mass spectrometry
(photoionization, matrix-assisted; nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
IT 11070-73-8, Bovine insulin
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(nonporous polyurethane (PU) membranes and porous PU **thin films** application as **sample** supports for MALDI-MS of wheat **proteins**)
REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:881021 HCAPLUS
DOCUMENT NUMBER: 134:27253
TITLE: Apparatus and method for microporation of biological membranes using **thin film** tissue interface devices
INVENTOR(S): Eppstein, Jonathan; Hatch, Michael R.; Papp, Joseph
PATENT ASSIGNEE(S): Altea Technologies, Inc., USA
SOURCE: PCT Int. Appl., 96 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000074767	A2	20001214	WO 2000-US15979	20000608
WO 2000074767	A3	20010705		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,

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            SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
            ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
            DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
            CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     EP 1124607          A1    20010822        EP 1999-934045    19990714
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO
PRIORITY APPLN. INFO.:                    US 1999-138050    P  19990608
                                          US 1998-92731     P  19980714
                                          WO 1999-US15967   W  19990714
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AB The invention provides for improved devices and methods for forming openings in a biol. membrane for delivering substances into an animal through the biol. membrane for treatment applications, or extg. substances from the animal through the biol. membrane for monitoring or other diagnosis applications and for increased transmembrane flux. pH.

IC ICM A61M037-00
ICS A61K041-00; A61B010-00; A61N001-32

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 63

IT Metallic fibers
RL: DEV (Device component use); USES (Uses)
(SMA; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Ablation
Analgesics
Animal tissue
Blood **analysis**
Body fluid
Computer application
Diabetes mellitus
Drugs
Dyes
Electroosmosis
Electroporation
Iontophoresis
Laser ablation
Magnetic materials
Membrane, biological
Microactuators
Micromachining
Piezoelectric actuators
Pressure
Screens (mesh)
Sensors
Skin
pH
(app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Shape memory alloys
RL: DEV (Device component use); USES (Uses)
(app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Peptides, biological studies
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process)
(bioactive; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT **Medical** equipment

(drug delivery device; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Temperature effects, biological
(heat, tissue poration; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Body fluid
(interstitial; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Apparatus
(microporator; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Pore
(micropore; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Sound and Ultrasound
(sonophoresis; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT **Films**
(**thin film** tissue interface, TFTI; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT Immunization
(vaccination; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT 7440-33-7, Tungsten, uses
RL: DEV (Device component use); USES (Uses)
(app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

IT 50-99-7, D-Glucose, **analysis**
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(blood; app. and method for microporation of biol. membranes using **thin film** tissue interface devices)

L26 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:229287 HCAPLUS
DOCUMENT NUMBER: 133:147214
TITLE: **Thin-film** magnetoelastic microsensors for remote query **biomedical** monitoring
AUTHOR(S): Grimes, Craig A.; Kouzoudis, Dimitris; Ong, Keat G.; Crump, Rick
CORPORATE SOURCE: Department of Electrical Engineering, The University of Kentucky, Lexington, KY, 40506, USA
SOURCE: Biomed. Microdevices (1999), 2(1), 51-60
CODEN: BMICFC; ISSN: 1387-2176
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Magnetoelastic thin-film sensors can be considered the magnetic analog of an acoustic bell: in response to an externally applied magnetic field impulse the sensors ring like a bell, emitting magnetic flux with a characteristic resonant frequency. The magnetic flux can be detected remotely, external to the test area, using a pick-up coil. By monitoring changes in the characteristic resonant frequency of the sensor multiple environmental parameters can be measured. In this work we report on application of magnetoelastic sensors for remote query measurement of temp., pressure, viscosity and, in combination with a glucose-responding mass-changing polymer, in situ measurement of biol.-level glucose concns. The advantage of using magnetoelastic sensors is that they are monitored

remotely, without the need for direct phys. connections such as wires or cables, nor line-of-sight alignment as needed with optical detection methods. The remote query capability allows the magnetoelastic sensors to be monitored from inside sealed, opaque containers. Depending upon the application magnetoelastic sensors can be sized from micrometer to millimeter dimensional scales, and have a material cost of approx. $0.001 allowing for their use on a disposable basis.

CC 9-16 (Biochemical Methods)
ST glucose **biomedical** monitor microsensor
IT Microsensors
(**thin-film** magnetoelastic microsensors for remote query **biomedical** monitoring)
IT 50-99-7, D-Glucose, **analysis**
RL: ANT (Analyte); ANST (Analytical study)
(**thin-film** magnetoelastic microsensors for remote query **biomedical** monitoring)
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:659981 HCAPLUS
DOCUMENT NUMBER: 132:148590
TITLE: Capacitive detection of **analyte** binding in **thin film** chemo- and biosensors
AUTHOR(S): Mirsky, Vladimir M.; Riepl, Michael; Mass, Markus; Hirsch, Thomas; Schweiss, Ruediger; Wolfbeis, Otto S.
CORPORATE SOURCE: Institute of Analytical Chemistry, Chemo- and Biosensors, University of Regensburg, Regensburg, 93040, Germany
SOURCE: Adv. Sci. Technol. (Faenza, Italy) (1999), 26(Solid State Chemical and Biochemical Sensors), 441-448
CODEN: ASETE5
PUBLISHER: Techna
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Changes of the capacitive component of the electrode admittance were used to monitor analyte binding to receptors in thin film chem. sensors and biosensors based on the system S-(CH2)n-receptor on Au. This approach was applied for detection of surfactant adsorption, antigen binding, and DNA hybridization, for investigation of immobilized biol. receptors, and for detection of binding of small mols. to artificial receptors. Another strategy is based on the detection of enzymic reaction resulting in a desorption of some species from the electrode. It was used to develop an assay for lipolytic enzymes. In this case, the sensor was based on a sandwich-like structure Au S(CH2)17CH3/phospholipid. Hydrolysis of the water-insol. phospholipid leads to formation of water-sol. products and their desorption from the electrode results in an increase in capacitance. To satisfy the requirements of soly., short chain phospholipids without additives or natural phospholipids in the presence of a water-sol. acceptor of lipolytic products can be used.

CC 9-2 (Biochemical Methods)
ST **analyte** binding capacitance **thin film** chemosensor biosensor; gold alkylthiol biosensor enzyme **protein** antigen; phospholipid gold alkylthiol biosensor
IT Nucleic acid hybridization
(DNA-DNA; DNA hybridization to receptors in **thin film** chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT Biosensors
(**analyte** binding to receptors in **thin film** chem. sensors and biosensors based on S-(CH2)n-receptor on Au)

IT Thiols (organic), uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(**analyte** binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT Antigens
RL: ANT (Analyte); ANST (Analytical study)
(antigen binding to receptors in **thin film** chem.
sensors and biosensors based on S-(CH2)n-receptor on Au)
IT Electric capacitance
(capacitive detection of **analyte** binding in **thin**
film chemo- and biosensors)
IT Enzymes, analysis
RL: ANT (Analyte); ANST (Analytical study)
(lipolytic enzyme binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT Lipoproteins
RL: ANT (Analyte); ANST (Analytical study)
(low-d.; LDL binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT **Proteins**, general, **analysis**
RL: ANT (Analyte); ANST (Analytical study)
(**protein** binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT Surfactants
(surfactant adsorption to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT 7440-57-5, Gold, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(**analyte** binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT 67-52-7, 2,4,6(1H,3H,5H)-Pyrimidinetrione
RL: ANT (Analyte); ANST (Analytical study)
(barbiturate binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
IT 9001-84-7, Phospholipase A2
RL: ANT (Analyte); ANST (Analytical study)
(lipolytic enzyme binding to receptors in **thin film**
chem. sensors and biosensors based on S-(CH2)n-receptor on Au)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:351150 HCAPLUS
DOCUMENT NUMBER: 131:135018
TITLE: In situ surface composition and structure of InGaN and GaN **thin films** by **time** -of-**flight mass** **spectroscopy** of recoiled ions
AUTHOR(S): Kim, E.; Berishev, I.; Bensaoula, A.; Schultz, J. A.
CORPORATE SOURCE: SVEC, Nitride Materials and Devices Laboratory, University of Houston, Houston, TX, 77204-5507, USA
SOURCE: J. Vac. Sci. Technol., B (1999), 17(3), 1209-1213
CODEN: JVTBD9; ISSN: 0734-211X
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Time-of-flight mass spectroscopy of recoiled ions (TOF-MSRI) is used to det. the surface chem. compn. and termination of GaN and InGaN thin films grown by gas source and electron cyclotron resonance mol. beam epitaxy (GS-MBE and ECR-MBE). It was shown that using TOF-MSRI all the crit.

growth steps, the nitridation, the buffer layer and the epilayers can be optimized in real time. In the case of GS-MBE, the ammonia pressure can be, reproducibly and easily, adjusted to achieve the highest N surface compn. at the min. corrosive ammonia flow. For InGaN the total TOF-MSRI ion counts drop with increasing In content. Such an observation can be applied to evaluate the thin film surface morphol. in addn. to its surface compn. Finally, preliminary data showing the use of TOF-MSRI for in situ GaN surface structure detn. were presented. It was also shown that by using a reflectron ion analyzer, much higher ion counts and better resoln. can be achieved than a conventional electrostatic sector system. With such a modification, dopant level sensitivities should be achievable and data rates compatible with closed loop process control algorithms become possible.

CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 73, 75

IT **Films**
Molecular beam epitaxy
Nitriding
Surface composition
Surface structure
(in situ surface compn. and structure of InGaN and GaN **thin films** grown by MBE with ammonia or ECR-N2 plasma as nitrogen source on sapphire and studied by TOF-MSRI)

IT 25617-97-4P, Gallium nitride(GaN) 120994-23-2P, Gallium indium nitride ((Ga,In)N)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(in situ surface compn. and structure of InGaN and GaN **thin films** grown by MBE with ammonia or ECR-N2 plasma as nitrogen source on sapphire and studied by TOF-MSRI)

IT 7664-41-7, Ammonia, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)
(in situ surface compn. and structure of InGaN and GaN **thin films** grown by MBE with ammonia or ECR-N2 plasma as nitrogen source on sapphire and studied by TOF-MSRI)

IT 7727-37-9, Nitrogen, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)
(plasma; in situ surface compn. and structure of InGaN and GaN **thin films** grown by MBE with ammonia or ECR-N2 plasma as nitrogen source on sapphire and studied by TOF-MSRI)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:720044 HCAPLUS
DOCUMENT NUMBER: 130:59246
TITLE: **Time** of **flight mass spectroscopy** of recoiled ions studies of gallium nitride **thin film** deposition by various molecular beam epitaxial methods
AUTHOR(S): Kim, E.; Berichev, I.; Bensaoula, A.; Schultz, A.; Waters, K.; Zagozdzon-Wosik, W.
CORPORATE SOURCE: Dep. of Electrical and Computer Eng., Univ. of Houston, TX, USA
SOURCE: MRS Internet J. Nitride Semicond. Res. (1998), 3, No pp. Given, Article 22
CODEN: MIJNF7
URL: http://nsr.mij.mrs.org/3/22/text/html

PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal; (online computer file)
LANGUAGE: English
AB Ga Nitride (GaN) thin films were successfully grown by electron cyclotron resonance MBE (ECR-MBE), gas source MBE (GSMBE), and chem. beam epitaxy (CBE). Time of flight mass spectroscopy of recoiled ions (TOF-MSRI) and RHEED were used in-situ to det. the surface compn., cryst. structure, and growth mode of GaN thin films deposited by the three MBE methods. The substrate nitridation and the buffer layers were monitored and optimized by TOF-MSRI and RHEED. For GSMBE, the Ga to N ratio is found to correlate well with ex-situ optical properties. In the case of CBE, C incorporation dets. the surface morphol., cryst. quality and optical activity of the epilayers.
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 66, 73

L26 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:229059 HCAPLUS
DOCUMENT NUMBER: 128:252264
TITLE: A miniaturized integrated optical sensor
INVENTOR(S): Carr, Richard A.; Melendez, Jose L.; Laney, Kirk S.
PATENT ASSIGNEE(S): Texas Instruments Inc., USA
SOURCE: Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 834735	A2	19980408	EP 1997-307744	19971001
EP 834735	A3	19990811		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 10132747	A2	19980522	JP 1997-304813	19971001

PRIORITY APPLN. INFO.: US 1996-27226 P 19961001
AB A miniaturized integrated sensor useful for indicating the presence of a sample analyte is disclosed. The sensor has a platform with an upper surface and a detector, light source, waveguide, and reflective fixtures embedded in the platform. The light source is preferably a light emitting diode and sits in a cup-shaped dimple that directs light from the light source toward one of the reflective fixtures to uniformly distribute light across the waveguide. The waveguide is coupled to an upper surface of the sensor platform and is coated with a thin film of indicator chem. which interacts with the sample analyte to produce optic signal changes that are measurable by the detector. A lead frame in the platform has pins which provide the interface to the outside world. In one embodiment, sensor package has a unique shape that requires a predetd. insertion and removal into an instrument harness or other similar application.
IC ICM G01N021-77
CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 34
IT Indicators
Magnon
(design of miniaturized integrated optical sensor with **thin film** of indicator for **analyte**)
IT Albumins, analysis
Proteins (general), **analysis**
RL: ANT (Analyte); ANST (Analytical study)

(design of miniaturized integrated optical sensor with **thin film** of indicator for **analyte**)
IT 60-27-5, Creatinine 6104-58-1, Brilliant blue G 7439-89-6, Iron, analysis 7439-95-4, Magnesium, analysis 7440-70-2, Calcium, analysis
RL: ANT (Analyte); ANST (Analytical study)
(design of miniaturized integrated optical sensor with **thin film** of indicator for **analyte**)
IT 88-89-1, Picric acid 1668-00-4, Arsenazo III 32638-88-3, Pyrogallol red 55909-73-4, Bromocresol 69898-45-9, Ferrozine
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(design of miniaturized integrated optical sensor with **thin film** of indicator for **analyte**)

L26 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:83157 HCAPLUS
DOCUMENT NUMBER: 128:122322
TITLE: I. Nanostructured high-temperature superconductors. II. Probing the growth mechanism of carbon nitride **thin films** by **time**-of-**flight mass spectroscopy**
AUTHOR(S): Yang, Peidong
CORPORATE SOURCE: Harvard Univ., Cambridge, MA, USA
SOURCE: (1997) 229 pp. Avail.: UMI, Order No. DA9810726
From: Diss. Abstr. Int., B 1998, 58(9), 4797
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 66, 73, 75
IT Mass spectrometry
Vapor deposition process
(probing growth mechanism of carbon nitride **thin films** by **time**-of-**flight mass spectroscopy**)
IT 154769-61-6P, Carbon nitride
RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); PROC (Process)
(probing growth mechanism of carbon nitride **thin films** by **time**-of-**flight mass spectroscopy**)

L26 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:504385 HCAPLUS
DOCUMENT NUMBER: 127:228882
TITLE: New redox sensors for environmental monitoring, biotechnology and **medical** applications
AUTHOR(S): Miloshova, M.; Bychkov, E.; Pradel, A.; Ribes, M.
CORPORATE SOURCE: MREID, Universite du Littoral, Dunkerque, 59140, Fr.
SOURCE: Proc. - Electrochem. Soc. (1997), 97-19(Chemical and Biological Sensors and Analytical Electrochemical Methods), 979-984
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB New redox sensors based on electronically conducting bulk oxide glasses and thin films were developed and applied for environmental monitoring, biotechnol. and medical applications. Main anal. characteristics and some application examples of these redox sensors are given and compared with those of a traditional Pt electrode.

CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 9, 72, 80
ST redox sensor environmental biotechnol **medical** monitoring; environmental monitoring redox sensor; biotechnol application redox sensor; **medical** application redox sensor
IT Clinical **analysis**
Films
Medicinal chemistry
(new redox sensors based on electronically conducting bulk oxide glasses and **thin films** for environmental monitoring, biotechnol. and **medical** applications)
IT Glass, **analysis**
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(new redox sensors based on electronically conducting bulk oxide glasses and **thin films** for environmental monitoring, biotechnol. and **medical** applications)
IT Biotechnology
Environmental **analysis**
Sensors
(new redox sensors for environmental monitoring, biotechnol. and **medical** applications)

L26 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:407665 HCAPLUS
DOCUMENT NUMBER: 127:143441
TITLE: Compositional characterization of very **thin** SiO2/Si3N4/SiO2 stacked **films** by x-ray photoemission spectroscopy and **time**-of-**flight**-secondary-ion-**mass** **spectroscopy** techniques
AUTHOR(S): Santucci, S.; Lozzi, L.; Ottaviano, L.; Passacantando, M.; Picozzi, P.; Moccia, G.; Alfonsetti, R.; Di Giacomo, A.; Fiorani, P.
CORPORATE SOURCE: INFM Unita Aquila. Dip. Fisica, Univ. Aquila, L'Aquila, Italy
SOURCE: J. Vac. Sci. Technol., A (1997), 15(3, Pt. 1), 905-910
CODEN: JVTAD6; ISSN: 0734-2101
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The chem. compn. of ultrathin oxide-nitride-oxide multilayer films grown on p-type Si substrates and subjected to different annealing processes and to various oxidn. times of the nitride layer was studied by XPS and time-of-flight-secondary-ion-mass spectroscopy. The annealing process strongly influences the bottom SiO2/Si interface allowing the satn. of the dangling bonds present at this interface and decreasing the concn. of free H. By increasing the oxidn. time, a better SiO2 layer is formed in the topmost layer of this structure.
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
IT Annealing
Controlled atmospheres
Dangling bond
Interface
Interfacial structure
Multilayer **films**
Oxidation
Semiconductor device fabrication
Time

(effects of annealing and oxidn. time on compn. of very **thin** SiO2/Si3N4/SiO2 stacked **films**)

IT 7631-86-9, Silica, properties 12033-89-5, Silicon nitride (Si3N4), properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(effects of annealing and oxidn. time on compn. of very **thin** SiO2/Si3N4/SiO2 stacked **films**)

IT 1333-74-0, Hydrogen, processes
RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)
(oxidn. and annealing atms.; effects of annealing and oxidn. time on compn. of very **thin** SiO2/Si3N4/SiO2 stacked **films**)

IT 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(oxidn. atm.; effects of annealing and oxidn. time on compn. of very **thin** SiO2/Si3N4/SiO2 stacked **films**)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; effects of annealing and oxidn. time on compn. of very **thin** SiO2/Si3N4/SiO2 stacked **films**)

L26 ANSWER 13 OF 25 HCAPLUS

ACCESSION NUMBER: 1996:692279 HCAPLUS
DOCUMENT NUMBER: 125:343305
TITLE: A two-dimensional molecular dynamics simulation of **thin film** growth by oblique deposition
AUTHOR(S): Dong, Liang; Smith, Richard W.; Srolovitz, David J.
CORPORATE SOURCE: Dep. Materials Sci. eng., Univ. Michigan, Ann Arbor, MI, 48109-2136, USA
SOURCE: J. Appl. Phys. (1996), 80(10), 5682-5690
CODEN: JAPIAU; ISSN: 0021-8979
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Atomistic, mol. dynamics simulations are employed to study the relation between film microstructure and deposition conditions (substrate temp., deposition kinetic energy, and deposition angle). Increasing substrate temp. and deposition kinetic energy leads to a fewer voids, smaller voids, smoother surfaces, an higher film d. As the deposition angle increases, the film microstructure changes from a dense film, with few voids, to a microstructure in which nearly colinear tracks of elongated voids form and, finally, to a highly porous structure of well-formed columns. The angle along which the voids are elongated and the orientation of the void tracks are the same and increase monotonically with the deposition angle (the column angles follow the same trend as the deposition angle). Void formation, void alignment into tracks, and the columnar structure are all attributable to shadowing effects, which become more pronounced with increasing deposition angle. The variation of the **column/ void** track angle .beta. with deposition angle .alpha. fits well with the classical tangent law at low angles, but is overpredicted by the tangent law at .alpha.>60.degree., consistent with expt. The column angle .beta. decreases slowly with increasing deposition kinetic energy due to increased surface mobility.

CC 75-1 (Crystallography and Liquid Crystals)

IT **Films**
Vapor deposition processes
(a two-dimensional mol. dynamics simulation of **thin film** growth by oblique deposition)

L26 ANSWER 14 OF 25 HCAPLUS
ACCESSION NUMBER: 1996:560867 HCAPLUS
DOCUMENT NUMBER: 125:269819
TITLE: Detection of an **analyte** by fluorescence using a **thin film** optical device
INVENTOR(S): Bogart, Gregory R.
PATENT ASSIGNEE(S): Biostar, Inc., USA
SOURCE: U.S., 71 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5552272	A	19960903	US 1993-76348	19930610

AB A device is disclosed for detecting the presence or amt. of an analyte of interest, comprising a reflective solid, optical support and a label capable of generating a fluorescent signal upon excitation with a suitable light source, wherein said support comprises an attachment layer comprising a chem. selected from the group consisting of dendrimers, star polymers, mol. self-assembling polymers, polymeric siloxanes, and film-forming latexes wherein the support provides an enhanced level of exciting photons to the immobilized fluorescent label compd., and wherein the support also increases the capture of fluorescent signal. Examples are given of such devices for the detection of, e.g., enzymes, bacteria, viruses, etc. in, e.g., body fluids.
IC ICM G01N033-543
NCL 435006000
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 14, 15, 73, 80
ST **thin film** optical app fluorometric analysis; body fluid analysis optical app; bacteria detection **thin film** optical app; virus detection **thin film** optical app; enzyme detection **thin film** optical app; microorganism detection **thin film** optical app; immunoassay fluorescence **thin film** optical app
IT Escherichia coli
(K1; fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Latex
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(TC7A; fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Bacteria
Blood analysis
Body fluid
Cerebrospinal fluid
Chlamydia
Films
Fluorescent substances
Immunoassay
Pharmaceutical analysis
Streptococcus pneumoniae
Streptococcus pyogenes
Virus
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)

IT Enzymes
Proteins, analysis
RL: ANT (Analyte); ANST (Analytical study)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Antibodies
Antigens
Carbohydrates and Sugars, analysis
Hormone receptors
Hormones
Lipids, analysis
Nucleic acids
Polysaccharides, analysis
Receptors
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Chelating agents
Flagella
Pili
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Ceramic materials and wares
Composites
Dendritic polymers
Glass, oxide
Metals, analysis
Plastics
Siloxanes and Silicones, analysis
Titanates
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Immunoglobulins
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(G, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT **Films**
(antireflective, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Pharynx
(disease, pharyngitis, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Immunoassay
(enzyme-linked immunosorbent assay, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Optical detectors
(fluorescence, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Spectrochemical analysis
(fluorometric, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Glycoproteins, specific or class
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(gp41env, fluorometric detection of biomols. and microorganisms with

thin-film optical app.)
IT Glycoproteins, specific or class
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(gp41env, fusion products with p24; fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Streptococcus
(group A, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Neisseria meningitidis
Streptococcus
(group B, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Receptors
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(hormone, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(human immunodeficiency, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT **Films**
(interference, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Nucleotides, analysis
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(oligo-, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT **Proteins**, specific or class
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(p24, fusion products with gp41; fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Virus, animal
(respiratory syncytial, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Glass, oxide
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(sodium borosilicate, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Polymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(star-branched, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Collagens, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(type I, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT Haemophilus influenzae
(type b, fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)
IT 51-28-5, DNP, analysis 2508-19-2, Trinitrobenzenesulfonic acid 9001-12-1, Collagenase 9003-99-0, Peroxidase
RL: ANT (Analyte); ANST (Analytical study)

(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)

IT 76-60-8, Bromocresol green
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)

IT 75-78-5 409-21-2, Silicon carbide (SiC), analysis 546-68-9, Tetraisopropyl titanate 1344-28-1, Aluminum oxide, analysis 1760-24-3 5593-70-4 7429-90-5, Aluminum, analysis 7440-21-3, Silicon, analysis 7440-47-3, Chromium, analysis 7440-67-7D, Zirconium, oxides 7631-86-9, Silicon dioxide, analysis 7782-40-3, Diamond, analysis 9002-98-6D, Polyethylenimine, N-Trimethoxysilylpropyl terminated 9003-17-2, Polybutadiene 9003-17-2D, Polybutadiene, Triethoxysilyl terminated 9003-53-6, Polystyrene 9016-00-6D, Poly[oxy(dimethylsilylene)], aminoalkyl derivs. 11105-01-4, Silicon oxynitride 12033-89-5, Silicon nitride, analysis 13463-67-7, Titanium dioxide, analysis 26913-06-4, Linear polyethylenimine 156048-34-9 156730-91-5 163442-68-0, Starburst 5th generation 182362-32-9
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(fluorometric detection of biomols. and microorganisms with **thin-film** optical app.)

L26 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:494700 HCAPLUS
DOCUMENT NUMBER: 125:162734
TITLE: Methods for detection of an **analyte**
INVENTOR(S): Bogart, Gregory R.; Moddel, Garret R.; Maul, Diana M.; Etter, Jeffrey B.; Crosby, Mark
PATENT ASSIGNEE(S): Biostar, Inc., USA
SOURCE: U.S., 71 pp. Cont.-in-part of U.S. Ser. No. 924343,abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 14
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5541057	A	19960730	US 1993-75952	19930610
AU 9179004	A1	19921021	AU 1991-79004	19910320
AU 653940	B2	19941020		
EP 539383	A1	19930505	EP 1991-910056	19910320
EP 539383	B1	19960918		
R: BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE				
JP 05506936	T2	19931007	JP 1991-509344	19910320
JP 3193373	B2	20010730		
ES 2094224	T3	19970116	ES 1991-910056	19910320
JP 2001235473	A2	20010831	JP 2000-287242	19910320
EP 1126278	A2	20010822	EP 2001-108521	19930610
EP 1126278	A3	20011017		
R: ES, FR, GB, IT, SE				
US 5639671	A	19970617	US 1995-412600	19950328
US 5629214	A	19970513	US 1995-456040	19950531
US 5869272	A	19990209	US 1995-455652	19950531
JP 10288616	A2	19981027	JP 1998-5911	19980114
JP 2951300	B2	19990920		

PRIORITY APPLN. INFO.: US 1989-408291 B2 19890918
US 1992-873097 B2 19920424

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        US 1992-924343   B2 19920731
        JP 1990-513789   A3 19900918
        EP 1991-910056   A  19910320
        JP 1991-509344   A3 19910320
        WO 1991-US1781   A  19910320
        US 1992-923048   B2 19920731
        EP 1993-915341   A3 19930610
        US 1993-75952    A3 19930610
        US 1993-76319    B1 19930610
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AB This invention relates to devices that produce a detectable attenuation of the spectral characteristic of light impinging on the devices by thin-film phenomena. Interference phenomena are central to the devices and methods of the invention. The presence or amt. of an analyte of interest (e.g., rheumatoid factor, viral antigens, Streptococcus Group A antigen, allergens, HIV I or II, etc.) in a sample (e.g., blood, urine, spinal fluid, gastric wash, vaginal secretions, etc.) is found by using a substrate having an optically active surface exhibiting a first color in response to light impinging thereon and exhibiting a second color comprising a combination of wavelengths of light different from the first color or comprising an intensity of at least one wavelength of light different from the first color in response to the light when the analyte is present on the surface. Then the optically active surface is contacted with a sample potentially comprising the analyte of interest under conditions in which the analyte can interact with the optically active surface to cause the optically active surface to exhibit the second color when the analyte is present. The devices permit detection of extremely small quantities of analyte in a sample, in amts. as low as 0.1 nM, 0.1 ng/mL, 50 fg, or 2 .times. 103 organisms in a rapid assay that lasts only a few minutes.

IC ICM C12Q001-70
ICS G01N033-53; G01N033-543; G01N021-00

NCL 435005000

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 3, 7, 15, 73

ST optically active surface app biochem analysis; interference **film** optical app biochem analysis; **thin film** analyzer body fluid; bacteria detection body fluid app; virus detection body fluid app; antigen detection body fluid app; antibody detection body fluid app

IT Bacteria
Blood analysis
Body fluid
Cerebrospinal fluid
Chlamydia
Ellipsometers
Escherichia coli
Feces
Films
Immunoassay
Infrared radiation
Interference
Latex
Light
Neisseria meningitidis
Optical detectors
Pericardium
Peritoneum
Pharynx
Pleura
Reflectometers
Respiratory tract

Saliva
Sputum
Stomach
Streptococcus pneumoniae
Ultraviolet radiation
Urine analysis
(app. and methods for anal. using **thin-film** phenomena)

IT Enzymes
RL: ANT (Analyte); ANST (Analytical study)
(app. and methods for anal. using **thin-film** phenomena)

IT Antibodies
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Allergens
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Antigens
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Autoimmune disease
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Lipopolysaccharides
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Microorganism
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Neoplasm
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Rheumatoid factors
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Virus
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT Siloxanes and Silicones, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)

(app. and methods for anal. using **thin-film** phenomena)

IT Collagens, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(app. and methods for anal. using **thin-film** phenomena)

IT Immunoglobulins
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(peroxidase conjugates; app. and methods for anal. using **thin-film** phenomena)

IT Vagina
(secretions; app. and methods for anal. using **thin-film** phenomena)

IT Antigens
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(CEA (carcinoembryonic antigen), app. and methods for anal. using **thin-film** phenomena)

IT Immunoglobulins
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(E, app. and methods for anal. using **thin-film** phenomena)

IT **Proteins**, specific or class
RL: ANT (Analyte); ANST (Analytical study)
(OMP (outer membrane **protein**), app. and methods for **anal.** using **thin-film** phenomena)

IT Intestine
(colon, app. and methods for anal. using **thin-film** phenomena)

IT Glycoproteins, specific or class
RL: ANT (Analyte); ANST (Analytical study)
(gp41, fusion products, app. and methods for anal. using **thin-film** phenomena)

IT Streptococcus
(group A, app. and methods for anal. using **thin-film** phenomena)

IT Streptococcus
(group B, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hepatitis A, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hepatitis B, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hepatitis C, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hepatitis D, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(hepatitis E, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(human immunodeficiency 1, app. and methods for anal. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(human immunodeficiency 2, app. and methods for anal. using **thin-film** phenomena)

IT **Proteins**, specific or class
RL: ANT (Analyte); ANST (Analytical study)
(p24, fusion products, app. and methods for **anal**. using **thin-film** phenomena)

IT Virus, animal
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(respiratory syncytial, app. and methods for anal. using **thin -film** phenomena)

IT Glass, oxide
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(sodium borosilicate, app. and methods for anal. using **thin-film** phenomena)

IT Haemophilus influenzae
(type b, app. and methods for anal. using **thin-film** phenomena)

IT 25550-58-7, Dinitrophenol
RL: ANT (Analyte); ANST (Analytical study)
(app. and methods for anal. using **thin-film** phenomena)

IT 9001-12-1, Collagenase 9003-99-0, Peroxidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

IT 75-78-5 919-30-2, 3-Aminopropyltriethoxysilane 1760-24-3 6843-66-9 7429-90-5, Aluminum, analysis 7440-21-3, Silicon, analysis 7440-47-3, Chromium, analysis 9002-98-6, Polyethylenimine 9003-17-2D, Polybutadiene, triethoxysilyl-modified 9003-53-6, Polystyrene 11105-01-4, Silicon oxynitride 12033-89-5, Silicon nitride, analysis 13463-67-7, Titanium dioxide, analysis 31001-77-1 144856-48-4, TC7A 163442-68-0, Starburst 5th Generation 176499-37-9 180208-74-6
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(app. and methods for anal. using **thin-film** phenomena)

L26 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:238718 HCAPLUS
DOCUMENT NUMBER: 122:326297
TITLE: Surface analysis of LCD materials in various stages of production by **time-of-flight** secondary ion **mass spectroscopy** (TOF-SIMS)
AUTHOR(S): Lee, J. J.; Lindley, P. M.; Odom, R. W.

CORPORATE SOURCE: Charles Evans & Associates, Redwood City, CA, 94063, USA
SOURCE: Mater. Res. Soc. Symp. Proc. (1994), 345, 197-204
CODEN: MRSPDH; ISSN: 0272-9172
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Time-of-flight secondary ion mass spectrometry (TOF-SIMS) is a surface anal. technique which provides a sensitive characterization of the elemental and mol. compn. of the near-surface region (top few monolayers) of solid materials. This mass spectrometry technique can also localize the distribution of specific elements, mols. or mol. fragments at submicrometer (.mu.m) lateral resolns. This paper presents the results of TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of Thin Film Transistor (TFT) LCDs. Sp. surfaces analyzed included the Cr mask, Cr patterned surface, color filter (RGB) regions, topcoat polymer and Indium Tin Oxide (ITO) layer. Both elemental and mol. contaminants were detected on the surfaces of these samples at several of the processing stages. Typical org. contaminants included polydimethylsiloxane (a common mold release agent and/or machine lubricant), polyethylene glycols (PEG), various fatty acids and glycerides. Inorg. contaminants included Na, K, Ca, Cl, Br, sulfates and phosphates. Pos. or neg. ion images showed distinctive patterns for most of these contaminants. Mol. ions of Cu phthalocyanine used as the blue dye in the RGB deposition step were also detected and localized.

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 66, 73, 79, 80

ST surface analysis LCD material TOF SIMS; color filter **thin film** transistor LCD

IT Fatty acids, analysis
Glycerides, analysis
Phosphates, analysis
RL: ARU (Analytical role, unclassified); OCU (Occurrence, unclassified); ANST (Analytical study); OCCU (Occurrence)
(contaminant; TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of **Thin Film** Transistor LCDs)

IT Surface analysis
(surface anal. of LCD materials in various stages of prodn. by **time**-of-**flight** secondary ion **mass spectroscopy**)

IT Siloxanes and Silicones, analysis
RL: ARU (Analytical role, unclassified); OCU (Occurrence, unclassified); ANST (Analytical study); OCCU (Occurrence)
(di-Me, contaminant; TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of **Thin Film** Transistor LCDs)

IT Optical imaging devices
(electrooptical liq.-crystal, surface anal. of LCD materials in various stages of prodn. by **time**-of-**flight** secondary ion **mass spectroscopy**)

IT Transistors
(field-effect insulated-gate, TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of **Thin Film** Transistor LCDs)

IT Mass spectrometry
(secondary-ion, **time**-of-**flight**, surface anal. of LCD materials in various stages of prodn. by **time**-of-**flight** secondary ion **mass spectroscopy**)

IT 7440-47-3, Chromium, uses 50926-11-9, Indium tin oxide

RL: DEV (Device component use); USES (Uses)
(TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of **Thin Film** Transistor LCDs)

IT 147-14-8, Copper phthalocyanine 7429-90-5, Aluminum, analysis 7439-92-1, Lead, analysis 7440-09-7, Potassium, analysis 7440-21-3, Silicon, analysis 7440-23-5, Sodium, analysis 7440-24-6, Strontium, analysis 7440-39-3, Barium, analysis 7440-45-1, Cerium, analysis 7440-70-2, Calcium, analysis 10097-32-2, Atomic bromine, analysis 22537-15-1, Atomic chlorine, analysis 25322-68-3, Polyethylene glycol
RL: ARU (Analytical role, unclassified); OCU (Occurrence, unclassified); ANST (Analytical study); OCCU (Occurrence)
(contaminant; TOF-SIMS analyses of LCD material surfaces during various stages of prodn. of the color filter side of **Thin Film** Transistor LCDs)

L26 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:239633 HCAPLUS
DOCUMENT NUMBER: 120:239633
TITLE: Devices and methods for detection of an **analyte** based upon light interference
INVENTOR(S): Bogart, Gregory R.; Moddel, Garret R.; Maul, Diana M.; Etter, Jeffrey B.; Crosby, Mark; Miller, John B.; Blessing, James; Kelley, Howard; Sandstrom, Torbjorn; Stiblert, Lars
PATENT ASSIGNEE(S): Biostar, Inc., USA
SOURCE: PCT Int. Appl., 208 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 14
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9403774	A1	19940217	WO 1993-US5673	19930610
W: AT, AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9179004	A1	19921021	AU 1991-79004	19910320
AU 653940	B2	19941020		
EP 539383	A1	19930505	EP 1991-910056	19910320
EP 539383	B1	19960918		
R: BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE				
JP 05506936	T2	19931007	JP 1991-509344	19910320
JP 3193373	B2	20010730		
ES 2094224	T3	19970116	ES 1991-910056	19910320
JP 2001235473	A2	20010831	JP 2000-287242	19910320
JP 07509565	T2	19951019	JP 1993-505280	19930610
EP 727038	A1	19960821	EP 1993-915341	19930610
R: ES, FR, GB, IT, SE				
EP 1126278	A2	20010822	EP 2001-108521	19930610
EP 1126278	A3	20011017		
R: ES, FR, GB, IT, SE				

PRIORITY APPLN. INFO.:

US 1992-924343	A	19920731
EP 1991-910056	A	19910320
JP 1991-509344	A3	19910320
WO 1991-US1781	A	19910320
EP 1993-915341	A3	19930610
WO 1993-US5673	W	19930610

AB Methods for analyzing an optical surface for an analyte of interest in a

test sample and related instruments/devices are disclosed. The method entails the use of a thin-film optical immunoassay device whereby an analyte of interest is detected in a test sample through spectral changes in the light impinging on the surface prior to and after the binding of the analyte to a reactive substrate layer(s). The device includes a substrate which has a 1st color in response to light impinging thereon. The substrate also exhibits a 2nd color which is different from the 1st color. The 2nd color is exhibited in response to the same light when the analyte is present on the surface. Thus, SiO was vapor deposited on a polished monocryst. Si wafer to a thickness of 550 .ANG.; the film had a golden interference color. The film was activated with N-(2-aminoethyl)-3-aminopropyltrimethoxysilane, coated with a DNP-albumin conjugate to a thickness of 40.ANG., rinsed, and dried. The coated wafer was used in a competitive immunoassay for DNP using goat anti-DNP antibody and an ellipsometer to measure the change in mass at the surface from the change in light intensity.

IC ICM G01B009-02
ICS G01N021-62
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 79, 80
ST interferometry immunoassay; ellipsometer **analyte** adsorption film
IT Ceramic materials and wares
Glass, oxide
Plastics
RL: ANST (Analytical study)
(attachment layer and optical **thin film** on substrate of, in interferometer for chem. anal.)
IT Carbohydrates and Sugars, uses
Lipids, uses
Polysaccharides, uses
Proteins, uses
RL: USES (Uses)
(binding layer contg., on interferometer for biochem. **anal.**)
IT Ellipsometers
(for chem. anal., attachment layers and optical **thin films** for)
IT Silazanes
Silicates, uses
Titanates
RL: ANST (Analytical study)
(optical **thin film** of, on ellipsometer for chem. anal.)
IT Latex
Dendritic polymers
Siloxanes and Silicones, uses
RL: ANST (Analytical study)
(optical **thin film** of, on interferometer for chem. anal.)
IT Polymers, uses
RL: USES (Uses)
(self-assembling, optical **thin film** of, on interferometer for chem. anal.)
IT **Proteins**, specific or class
RL: PROC (Process)
(fusion products, of p24 **protein** and gp41 glycoprotein of HIV, immobilization of, on silicon wafer for immunoassay)
IT Spectrochemical analysis
(interferometric, attachment layers and optical **thin films** for)
IT Polymers, uses

RL: USES (Uses)
(star-branched, optical **thin film** of, on interferometer for chem. anal.)

IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(monocryst., attachment layer and optical **thin film** on substrate of, in interferometer for chem. anal.)

IT 7429-90-5D, Aluminum, alkoxides 409-21-2, Silicon carbide, uses 1314-23-4, Zirconium oxide, uses 12033-89-5, Silicon nitride, uses 13463-67-7, Titanium dioxide, uses
RL: ANST (Analytical study)
(optical **thin film** of, on ellipsometer for chem. anal.)

L26 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:143765 HCAPLUS
DOCUMENT NUMBER: 120:143765
TITLE: **Analysis** of **biomedical** polymer surfaces: Polyurethanes and plasma-deposited **thin films**
AUTHOR(S): Ratner, Buddy D.; Tyler, Bonnie J.; Chilkoti, Ashutosh
CORPORATE SOURCE: Cent. Bioeng., Univ. Washington, Seattle, WA, 98195, USA
SOURCE: Clin. Mater. (1993), 13(1-4), 71-84
CODEN: CLNME2; ISSN: 0267-6605
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review with 95 refs. The surface characterization of biomaterials is important for understanding the biol. reactivity of surfaces and for monitoring surface reproducibility and contamination. Electron spectroscopy for chem. anal. (ESCA), secondary ion mass spectrometry (SIMS), contact-angle methods, vibrational spectroscopic methods, and scanning probe microscopies are discussed. Examples are presented using these methods to characterize RF plasma-deposited surfaces based upon acetone and oxygen for cell culture and Biomer surfaces.

CC 63-0 (Pharmaceuticals)

ST review **biomedical** polyurethane surface plasma coating

IT **Medical** goods
Prosthetic materials and Prosthetics
(polyurethanes for, surface properties of, plasma coating effect on)

IT Urethane polymers, biological studies
RL: BIOL (Biological study)
(surface properties of **biomedical**, plasma coating effect on)

IT Vapor deposition processes
(plasma, for **biomedical** polyurethane surfaces, properties in relation to)

L26 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:619790 HCAPLUS
DOCUMENT NUMBER: 117:219790
TITLE: Bulk and **thin film** carbon materials for **biomedical** applications: Quality control criteria and procedures
AUTHOR(S): Vallana, F.; Arru, P.; Santi, M.
CORPORATE SOURCE: Cardiovasc. Prosth. Div., Sorin Biomed. S.p.A., Saluggia, Italy
SOURCE: Bioceram. Hum. Body, Proc. Int. Congr. (1992), Meeting Date 1991, 461-70. Editor(s): Ravaglioli, Antonio; Krajewski, Adriano. Elsevier: London, UK.
CODEN: 58AXAK

DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
AB A review with 18 refs. on the main criteria and exptl. techniques for the quality control of biocompatible tubostratic carbons in the manuf. of implantable prostheses.
CC 63-0 (Pharmaceuticals)
ST review carbon **biomedical** quality control
IT Quality control
(of **thin film** carbons, for **biomedical** use)
IT 7440-44-0, Carbon, biological studies
RL: BIOL (Biological study)
(**thin film**, for **biomaterials**, quality control of)

L26 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:133858 HCAPLUS
DOCUMENT NUMBER: 114:133858
TITLE: Time-of-flight mass spectrometry of laser-produced fragments
AUTHOR(S): Alimpiev, S. S.; Nikiforov, S. M.; Dudoyan, A. K.; Shevchenko, V. Ya.
CORPORATE SOURCE: Gen. Phys. Inst., Moscow, 117942, USSR
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1990), 1352(Int. Sch. Laser Surf. Microprocess., 1st, 1989), 227-38
CODEN: PSISDG; ISSN: 0277-786X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The application of reflection time of flight mass spectrometry for analyzing the products of laser-induced Si org. film modification and YBa2Cu3O7-x in bulk ablation is discussed. The measurements of threshold laser fluences and fragment velocity distribution are presented.
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 73, 74
IT Laser radiation, chemical and physical effects
(ablation by, of superconductors and silicon org. **thin films**)
IT Sputtering
(of superconductors and silicon org. **thin films**, time of flight mass spectrometry detn. of products from)
IT **Mass spectroscopy**
(**time-of-flight**, sputtering fragments detd. by, for superconductors and silicon org. **thin films**)

L26 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:14064 HCAPLUS
DOCUMENT NUMBER: 114:14064
TITLE: Theory of angular selective transmittance in oblique columnar **thin films** containing metal and voids
AUTHOR(S): Smith, G. B.
CORPORATE SOURCE: Phys. Dep., Chalmers Univ. Technol., Swed.
SOURCE: Appl. Opt. (1990), 29(25), 3685-93
CODEN: APOPAI; ISSN: 0003-6935
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The transmittance T and reflectance R of s- and p-polarized light, incident at various angles onto thin films which contain metal and voids in an oblique columnar structure, were analyzed using suitably modified thin film equations. Columnar Al was treated for various column angles in

uniaxial and biaxial models to demonstrate that the model can predict the novel features found in recent expts. Dielec. consts. from quasistatic effective medium theory are used. The p-wave transmittance can be very asym. as incident angle .theta. varies about the normal, but Rp, Rs, and Ts are sym. It is differences in the forward and reverse imaginary part of the complex p-wave phase shift for each .theta. that causes Tp to be asym. This difference leads to a modification to the std. thin film equations, or transfer matrix elements, which do not vanish when intensity amplitudes are calcd. Angular selective transmittance of luminous and solar radiation then becomes possible, which is important for several energy related applications.

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST reflection transmittance **columnar** film metal **void**

IT Optical absorption
Optical reflection
(by columnar **thin films** contg. metals and voids)

IT Dielectric constant and dispersion
(of columnar **thin films** contg. metals and voids)

L26 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1990:239248 HCAPLUS

DOCUMENT NUMBER: 112:239248

TITLE: Effect of bias sputtering on stability of amorphous terbium-iron (Tb32Fe68) compositionally modulated **thin films**

AUTHOR(S): Choe, G.; Walser, R. M.

CORPORATE SOURCE: Cent. Mater. Sci. Eng., Univ. Texas, Austin, TX, 78712, USA

SOURCE: J. Appl. Phys. (1990), 67(9, Pt. 2B), 5316-18
CODEN: JAPIAU; ISSN: 0021-8979

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effect of bias sputtering on the oxidn. resistance of amorphous Tb32Fe68 compositionally modulated films (CMFs) was studied. The columnar morphologies of aged, unbiased films were more diffused than those of as-deposited films. On the other hand, the morphologies of the -70 V bias-sputtered, aged film were as dense and featureless as those of as-deposited films. The substrate bias also influenced the magnetic and magneto-optical characteristics of aged films. The Kerr rotation obtained from the film surface was significantly increased by the formation of a transparent, nonmagnetic oxide layer, and by optical interference between this layer and the unoxidized amorphous matrix. The coercivity of the amorphous matrix in unbiased films increased markedly with aging time. These changes are attributed to compositional changes enhanced by the easy diffusion path of O in the **columnar void** structure.
In contrast, the coercivity of -70 V bias-sputtered films was unchanged with aging, and exhibited the B-H loops of exchange coupled double layers. The results indicated that the intrinsic stability of Tb-Fe CMFs was strongly influenced by the film microstructure and was improved by the application of substrate bias during deposition.

CC 56-10 (Nonferrous Metals and Alloys)

ST terbium iron amorphous **thin film**; bias sputtering
oxidn **thin film**

IT Sputtering
(bias, of amorphous compositionally modulated iron terbium **thin films**, **film** oxidn. resistance in relation to)

IT Metallic glasses
RL: PRP (Properties)
(iron-terbium, compositionally modulated **thin films**

, oxidn. resistance of, bias sputtering effect on)
IT 104368-67-4, Iron 68, terbium 32 (atomic)
RL: USES (Uses)
(amorphous compositionally modulated **thin films**, oxidn. resistance of, bias sputtering effect on)

L26 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1988:521690 HCAPLUS
DOCUMENT NUMBER: 109:121690
TITLE: Analysis of **thin-film** systems using nonresonant multiphoton ionization
AUTHOR(S): Pallix, J. B.; Becker, C. H.; Newman, N.
CORPORATE SOURCE: Chem. Phys. Lab., SRI Int., Menlo Park, CA, 94025, USA
SOURCE: J. Vac. Sci. Technol., A (1988), 6(3, Pt. 1), 1049-52
CODEN: JVTAD6; ISSN: 0734-2101
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Surface anal. by laser ionization (SALI) has been used to probe thin-film chem. compns. Ar+ sputtering at 5-7 keV is used for ion beam milling together with nonresonant photoionization of sputtered neutrals. Photoions are analyzed by reflection time-of-flight mass spectrometry. SALI depth profiles of ultrahigh vacuum deposited Au on GaAs show diffusion of Ga and As in the Au film and dramatic compositional variation at the interface after annealing at 405.degree.C for 10 min. Mass spectra taken from different depths within a superconducting thin film of nominal compn. YBa2Cu3O7 show a variety of impurity compds. even though crit. current densities are quite high.

CC 79-6 (Inorganic Analytical Chemistry)
Section cross-reference(s): 76

ST **thin film** analysis nonresonant multiphoton ionization; gallium detn gold **film** laser ionization; arsenic detn gold **film** laser ionization; gold analysis arsenic gallium laser ionization; gallium arsenide analysis laser ionization; semiconductor gold **film** analysis laser ionization; superconductor **film** analysis laser ionization; yttrium barium copper oxide analysis surface; surface analysis laser ionization mass spectrometry

IT Superconductors
(high-temp. yttrium barium copper oxide, depth profile anal. of **thin films** of, by nonresonant multiphoton ionization)

IT **Mass spectroscopy**
(photoionization, laser-induced, reflection **time**-of-**flight**, for depth profile anal. of **thin films** using multiphoton nonresonant technique)

IT 109064-29-1
RL: ANST (Analytical study)
(depth profile anal. of superconducting **thin films** of, by nonresonant multiphoton ionization)

L26 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1984:412727 HCAPLUS
DOCUMENT NUMBER: 101:12727
TITLE: Revised structure zone model for **thin film** physical structure
AUTHOR(S): Messier, R.; Giri, A. P.; Roy, R. A.
CORPORATE SOURCE: Mater. Res. Lab., Pennsylvania State Univ., University Park, PA, 16802, USA
SOURCE: J. Vac. Sci. Technol., A (1984), 2(2, Pt. 1), 500-3
CODEN: JVTAD6; ISSN: 0734-2101
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Thin films prepd. under conditions of low adatom mobility are characterized by a highly anisotropic phys. structure with a wide range of systematically varying **column** and **void** sizes. The structure zone models, previously developed to classify the larger sized phys. structures, are revised to account for the evolutionary growth stages of structure development as well as the sep. effects of thermally and bombardment-induced mobility. The zone T introduced by Thornton (1974) is shown to be a subzone within zone 1.

CC 66-5 (Surface Chemistry and Colloids)

L26 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1983:462481 HCAPLUS
DOCUMENT NUMBER: 99:62481
TITLE: Ultrasonic attenuation determination of superconducting energy gap anamolies in **thin films** of niobium nitride (NbN)
AUTHOR(S): Fredricksen, H. P.; Levy, M.; Tachiki, M.; Ashkin, M.; Gavaler, J. R.
CORPORATE SOURCE: Phys. Dep., Univ. Wisconsin, Milwaukee, WI, 53201, USA
SOURCE: Ultrason. Symp. Proc. (1982), 2, 1010-12
CODEN: ULSPDT; ISSN: 0090-5607
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A 700-MHz range surface acoustic wave study of 9 NbN films on LiNbO3 substrates showed a non-BCS-like temp. dependence of the ultrasonic attenuation in the superconducting state. The 0.02-0.3 .mu.m thin films showed a rapid (1-2)-decibel drop in attenuation at the transition temp. As the temp. decreases, the attenuation remains nearly const. to T .ltoreq. 0.5Tc where a linear decrease begins which continues to the lowest temp. (1.5 K). By inverting the BCS expression for the attenuation, the temp. dependence of the gap parameter implied by this attenuation behavior can be found. The result is a curve which begins to follow the BCS gap 2.DELTA.0/kBTc .simeq. 0.5 when the curve levels off and remains const. over the rest of the temp. range. Based on the known **columnar-void** structure of these films, a possible explanation is described in terms of the Anderson localization theories.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 65

IT Electron, conduction
(Anderson localization of, in niobium nitride **thin films**, energy gap in relation to)

IT Sound and Ultrasound, chemical and physical effects
(attenuation of, in niobium nitride **thin films**, in detn. of superconducting energy-gap anomalies)

IT Superconductors
(niobium nitride **thin films**, energy gap of, ultrasonic attenuation in detn. of)

IT Energy level, band structure
(gap, superconducting, of niobium nitride **thin films**, ultrasonic attenuation in detn. of anomalies of)

IT 24621-21-4
RL: PRP (Properties)
(superconducting energy gap in **thin films** of, ultrasonic-attenuation detn. of)

IT 12031-63-9
RL: PRP (Properties)
(superconducting energy gap of niobium nitride **thin films** on, ultrasonic-attenuation detn. of)

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=> fil wpdis
'WPDIS' IS NOT A VALID FILE NAME
SESSION CONTINUES IN FILE 'WPIDS'

=> d his

     (FILE 'HCAPLUS' ENTERED AT 12:27:15 ON 04 MAR 2002)
                DEL HIS Y

     FILE 'WPIDS' ENTERED AT 12:36:00 ON 04 MAR 2002
L1          98185 S THIN (2A) FILM#
L2         100931 S THIN (5A) FILM#
L3             43 S COLUM? (3W) VOID?
L4              1 S L2 AND L3
L5            822 S COLUMN## (5A) FILM#
L6            259 S L1 AND L5
L7           4202 S MASS (3A) SPECTROSC?
L8              1 S L7 AND L6
L9            910 S TIME (3W) FLIGHT
L10           308 S L7 AND L9
L11             6 S L10 AND L2
L12             6 S L4 OR L8 OR L11
L13            55 S L7 AND L2
L14            21 S L13 AND ANALYSIS
L15          5000 S MASS SPECTROM?
L16            67 S L15 AND L2
L17            25 S L16 AND ANALYSIS
L18            31 S L17 OR L14
L19            25 S L18 NOT L12
L20        509554 S SAMPLE? OR ANALYT? OR BIOMATER? OR BIO## MATER? OR  CHEM?
L21            12 S L19 AND L20

=> d .wp l12 1-6;d .wp l21 1-12

L12  ANSWER 1 OF 6  WPIDS COPYRIGHT 2002   DERWENT INFORMATION LTD
AN   2001-418086 [44]   WPIDS
CR   2002-097403 [73]
DNN  N2001-309736          DNC C2001-126439
TI   Use of deposited thin films for analysis of a sample,
     by applying a sample to the deposited thin film, and
     analyzing the sample by a detection method.
DC   B04 D16 S03
IN   BAE, S; CUIFFI, J; FONASH, S J; HAYES, D J
PA   (PENN-N) PENN STATE RES FOUND
CYC  93
PI   WO 2001046458 A1 20010628 (200144)* EN   83p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
            NL OA PT SD SE SL SZ TR TZ UG ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
            DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
            LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
            SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
     AU 2001022770 A  20010703 (200164)
ADT  WO 2001046458 A1 WO 2000-US34411 20001219; AU 2001022770 A AU 2001-22770
     20001219
FDT  AU 2001022770 A Based on WO 200146458
PRAI US 2000-231474P  20000908; US 1999-172840P  19991220; US 2000-201936P
     20000505; US 2000-201937P  20000505; US 2000-580105   20000530
AB   WO 200146458 A UPAB: 20020226
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NOVELTY - Use of deposited **thin films** for analysis of a sample, selective adherence and detection of analytes in a sample, and for analyzing a chemical reaction.

DETAILED DESCRIPTION - Analysis (M1) of a sample involves applying a sample to the deposited **thin film** (DTF), and analyzing the sample by a detection method. Selective adherence (M2) and detection of analytes in a sample involves applying a sample to DTF, where a particular analyte or analytes from the sample adhere to DTF, selectively removing non-adherent analytes, and analyzing the adherent analytes by a detection method. Analyzing (M3) a chemical reaction involves applying a sample to DTF, allowing a chemical reaction to occur, and analyzing the chemical reaction by a detection method.

USE - DTF is useful for analysis of a sample, selective adherence and detection of analytes in a sample, and for analyzing a chemical reaction (claimed). DTF is useful in detection, analytical, contact, and bio-medical applications such as desorption-ionization **mass spectroscopy**, electrical contacts for organic **thin films** and molecules, optical coupling of light energy for analysis, biological materials manipulation, chromatographic separation, head space adsorbance media, media for atomic molecular adsorbance or attachment, and substrates for cell attachment. DTF is useful in applications such as gas chromatography, gel electrophoretic separation and iso-electric focusing, and as a media for atomic or molecular absorbance or attachment.

Dwg.0/22

L12 ANSWER 2 OF 6 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-422069 [36] WPIDS
DNN N2000-314919 DNC C2000-127580
TI Thin layer for sample analysis by matrix assisted laser desorption mass spectrometry, has matrix polymer of preset composition and preset thickness, formed on substrate.
DC A11 A23 A89 E14 J04 P73
IN DORSCHEL, C A; JARRELL, J A; TOMANY, M J
PA (WATE-N) WATERS INVESTMENTS LTD
CYC 1
PI US 6071610 A 20000606 (200036)* 17p
ADT US 6071610 A Cont of US 1993-151490 19931112, CIP of US 1995-480428 19950606, US 1997-853205 19970509
PRAI US 1997-853205 19970509; US 1993-151490 19931112; US 1995-480428 19950606
AB US 6071610 A UPAB: 20000801

NOVELTY - The **thin film** (11), of thickness of 0.005-5 micro m, comprises crystals of matrix material dispersed in a polymer support material, on a substrate (13) made of glass, ceramic, plastic or metal. The support material limits the growth of the crystals. The matrix polymer composition ranges from 70-30% polymer.

DETAILED DESCRIPTION - The **thin film** is formed by depositing a solution containing matrix material, support material and solvent on a spinning substrate at a deposition rate sufficient to allow evaporation of the solvent.

An INDEPENDENT CLAIM is also included for the device for performing matrix assisted laser desorption mass spectrometry of sample molecules. The **thin film**, preferably less than 1 micro m in thickness, is positioned on the substrate, on which sample molecules are placed. The sample molecules and matrix material polymer composition are substantially coplanar.

USE - For receiving samples for analysis by matrix assisted laser desorption and ionization **time** of **flight** mass spectrometry.

ADVANTAGE - The **thin film** promotes resolution and/or reproducibility of mass spectrometry analysis. The device is resistant to a decrease in the mass resolution and sensitivity.

DESCRIPTION OF DRAWING(S) - The figure shows an arrangement of the sample, the **thin film** and the substrate.

Thin film 11
Substrate 13
Dwg.1/6

L12 ANSWER 3 OF 6 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-115635 [10] WPIDS
DNN N2000-087499 DNC C2000-035299
TI Analysis of the surface characteristics of a sample.
DC J04 S03 V05
IN GRUEN, D M; HOLECEK, J C; KRAUSS, A R; SCHULTZ, J A; SMENTKOWSKI, V S
PA (USAT) US DEPT ENERGY
CYC 1
PI US 6008491 A 19991228 (200010)* 15p
ADT US 6008491 A US 1997-953792 19971015
PRAI US 1997-953792 19971015
AB US 6008491 A UPAB: 20000228

NOVELTY - A sample (38) is positioned in a sample vacuum chamber (40) with the surface (44) to be analysed in close proximity to a pumping aperture (42) of an ion extractor (12) of a **time** of **flight** reflectron mass analyzer (10) positioned with its horizontal axis (46) at an angle of 74 from the undeflected primary beam line (48). A beam of primary ions is generated along a primary beam line (50), secondary ion **mass spectroscopy** (SIMS) analysis and **mass spectroscopy** of recoiled ions (MSRI) analysis performed and the mass of the sample surface species determined from the measured times of flight in the single mass analyzer.

DETAILED DESCRIPTION - The **time** of **flight** mass analyzer comprises the extractor, a lens assembly (14), a field free float tube (16) and a reflectron (20) having front (22) and back (26) rings all contained in a vacuum chamber (34) with a negative high voltage of -8000V applied to the extractor, lens assembly, field free float tube and reflectron front ring. The sample chamber and analyzer vacuum chamber are maintained at a predetermined vacuum and pressure. SIMS analysis is performed by applying a positive high voltage of between +15V and +50V to the back ring and generating a beam of primary ions along the primary beam line causing a collision cascade in the sample surface such that elemental and molecular sample surface species are ejected including a positive ion fraction and a neutral species fraction and measuring the times of flight of the positive ion fraction at an ion detector (30) and the times of flight of the neutral species fraction at a line of sight neutral detector (32) to obtain an SIMS spectra. MSRI analysis is performed by applying a positive high voltage of greater than +500V to the back ring and generating a beam of primary ions long the primary beam line causing a binary collision between the primary ions and sample surface species such that elemental surface species are ejected including a positive ion fraction and a neutral species fraction and measuring the times of flight of the positive ion fraction at the ion detector and the times of flight of the neutral species fraction at the line of sight neutral detector to obtain an MSRI spectra. The SIMS and MSRI analyses providing complimentary qualitative and quantitative information on the sample. An INDEPENDENT claim is also included for the **time** of **flight** reflectron mass analyzer.

USE - In the analysis of the surface of a sample such as in **thin films** growth for diamond, semiconductor and metal oxide films.

ADVANTAGE - The **time** of **flight** reflectron mass analyzer has a critical, optimal geometry and adjustable reflectron voltages and extraction optics such that SIMS measurements and MSRI measurements may be accomplished with the same instrument. Both SIMS and MSRI measurements can be performed by the mass analyzer in a **thin film** growth environment providing a diverse range of information (composition, structure, growth). The instrument is compatible with process conditions (temperature, pressure), is non-destructive to the sample surface, operates in real time and does not interfere with the surface deposition instruments.

DESCRIPTION OF DRAWING(S) - The drawing shows a section through the mass analyzer.

time of **flight** reflectron mass analyzer 10
ion extractor 12
lens assembly 14
high voltage float tube 16
field free drift region 18
reflectron 20
front ring 22
central rings 24
back ring 26
back grid 28
ion detector 30
line of sight neutral detector 32
vacuum chamber 34
sample 38
sample vacuum chamber 40
pumping aperture 42
sample surface 44
analyzer horizontal axis 46
undeflected primary ion beam line 48
initial primary ion beam line 50
Dwg.4/8

L12 ANSWER 4 OF 6 WPIDS
AN 2000-098148 [09] WPIDS
DNN N2000-075822 DNC C2000-028599
TI Polyurethane sample film for use in matrix-assisted laser desorption/ionization **time** of **flight** mass spectrometric analysis of blood.
DC A25 A96 B04 D16 J04 S03 V05
IN CHOW, A; DONALD, L; DUCKWORTH, H; ENS, W; MANLEY, D; MCCOMB, M; OLESCHUK, R; ONEIL, J; PERREAULT, H; STANDING, K
PA (UYMA-N) UNIV MANITOBA
CYC 1
PI CA 2228413 A1 19990730 (200009)* EN 47p
ADT CA 2228413 A1 CA 1998-2228413 19980130
PRAI CA 1998-2228413 19980130
AB CA 2228413 A UPAB: 20000218

NOVELTY - Use of a non-porous membrane as an analyte support for matrix-assisted laser desorption/ionization **time**-of-**flight** mass spectrometry (MALDI-TOFMS).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM describes a method of preparing an analyte sample by:

(a) Providing a non-porous support.
(b) Providing a matrixing solution.
(c) Applying the analyte sample to the non-porous membrane.
(d) Allowing the sample to dry.
(e) Applying the matrixing solution.
(f) Allowing the sample to dry.

USE - Matrix-assisted laser desorption/ionization **time** of **flight** mass spectrometry analysis of biological samples such as whole blood, particularly in screen of new-borns for diseases such as sickle cell disease.

ADVANTAGE - Sample preparation is much simpler than when using metal targets. The non-porous membrane surface promote crystal growth on the surface of the membrane thus increasing the sensitivity and accuracy of the process.

Dwg.0/16

L12 ANSWER 5 OF 6 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-229455 [21] WPIDS
DNN N1997-189679
TI Integrated liquid handling system for MALDI-TOF **mass spectroscopy** - has **thin film** support with sample & analyte compartment with reservoir for sample fluids, microchannel connects reservoir with MALDI ionisation surface and interface between support and vacuum chamber opening of **mass spectroscope**.
DC S03 V05
IN APFFEL, J A; CHAKEL, J A; HANCOCK, W S; LICHTENWALTER, K
PA (HEWP) HEWLETT-PACKARD CO
CYC 3

PI					
GB 2306644	A	19970507	(199721)*	22p
DE 19645070	A1	19970507	(199724)	11p
US 5705813	A	19980106	(199808)	12p
GB 2306644	B	19990407	(199916)	

ADT GB 2306644 A GB 1996-19113 19960912; DE 19645070 A1 DE 1996-19645070 19961031; US 5705813 A US 1995-548349 19951101; GB 2306644 B GB 1996-19113 19960912
PRAI US 1995-548349 19951101
AB GB 2306644 A UPAB: 19970522

The liquid handling system includes a **thin film** support with an upper and a lower surface. The upper surface is optionally enclosed and has a sample handling compartment and the lower surface has a mechanism for moving an analyte and fluids within the compartment.

The compartment includes a reservoir for receiving fluid substances involved in sample handling, a MALDI ionisation surface, and a microchannel interconnecting the reservoir and the ionisation surface. The **thin film** support is interfaced with the vacuum gate of a mass spectrometer. A mechanism exists for automating sample handling. The microchannel includes a separation region.

ADVANTAGE - For sample preparation for **mass spectroscopy** in bio-analytical problems requiring chemical manipulation prior to mass analysis. Does not require significant manual manipulation and interaction. Handles small amounts of sample with minimal loss of sample. Increases sensitivity and selectively of analyte measurement. Reduces cost of molecular analysis by **mass spectroscopy** by constructing liquid handling system as single disposable unit.

Dwg.1/3

L12 ANSWER 6 OF 6 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-229454 [21] WPIDS
DNC C1997-073688
TI Matrix assisted laser desorption/ionisation **time** of **flight** mass spectrometry system - for genetic diagnosis of DNA samples, has **thin film** support with sample preparation compartment for oligo nucleotide analyte communication etc..
DC B04 D16

IN APFFEL, J A; CHAKEL, J A; HANCOCK, W S; LICHTENWALTER, K
PA (HEWP) HEWLETT-PACKARD CO
CYC 3
PI GB 2306643 A 19970507 (199721)* 34p
DE 19643921 A1 19970507 (199724) 16p
US 5716825 A 19980210 (199813) 12p
GB 2306643 B 19990407 (199916)
ADT GB 2306643 A GB 1996-19068 19960912; DE 19643921 A1 DE 1996-19643921 19961030; US 5716825 A US 1995-551501 19951101; GB 2306643 B GB 1996-19068 19960912
PRAI US 1995-551501 19951101
AB GB 2306643 A UPAB: 19970522
An integrated nucleic acid analysis system for matrix assisted laser desorption/ionisation **time** of **flight** mass spectrometry (MALDI-TOF MS) has a **thin film** support (8) with a sample preparation compartment for an oligonucleotide analyte and fluids and a device form mixing the compartment contents. A MALDI ionisation surface (30) communicates with the compartment. The support can be interfaced with a mass spectrometer. The system includes a device for automating sample preparation. Certain variations on the system are claimed as follows: (A) The compartment is on the upper surface (12) of the support. The lower surface of the support has the mixing device and a temperature controller for the compartment. The compartment includes a well, a reaction zone (32) to be kept between 10 - 100 deg. C and a device for immobilising a catalyst. (B) The compartment has reaction zones connected by micro-channels to wells (24, 26, 28), capture regions and MALDI ionisation surface(s). The channels direct the flow of analytes and reagents and include seals. The wells and capture regions have access ports. (C) As in (B) where the ionisation surface has a rotatable comb. In a first position the teeth of the comb draw analytes from the wells and deposit them on the surface. In a second position the surface is aligned with the vacuum gate of a mass spectrometer.

USE - The system is useful for genetic diagnosis of DNA samples.

ADVANTAGE - Integration of compartment and ionisation surface eliminates manual handling of the sample.

Dwg.1/4

L21 ANSWER 1 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2002-003929 [01] WPIDS
DNN N2002-003019
TI Specimen surface **analysis** method involves radiating electron beam and X-rays simultaneously on measuring plane having electroconductive film.
DC S03
PA (CANO) CANON KK
CYC 1
PI JP 2001272363 A 20011005 (200201)* 8p
ADT JP 2001272363 A JP 2000-84360 20000324
PRAI JP 2000-84360 20000324
AB JP2001272363 A UPAB: 20020105
NOVELTY - An electroconductive **thin film** (1) with varying **film** thickness is formed on the measuring plane of a specimen (2) to be analyzed. Electron beam with predetermined energy and X-rays are simultaneously radiated on the measuring plane containing the electroconductive **thin film**.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the high resistant specimen analyzer.

USE - For X-ray photoelectron spectroscopic **analysis** of specimen.

ADVANTAGE - A high resistant specimen is analyzed easily by both X-ray photoelectron spectroscopic **analysis** and secondary ion **mass spectrometry**. Hence **chemical** bonding conditions of an element are analyzed effectively.

DESCRIPTION OF DRAWING(S) - The figure shows the electroconductive **thin film** formation process. (Drawing includes non-English language text).

Electroconductive **thin film** 1
Specimen 2
Dwg.3/3

L21 ANSWER 2 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-205361 [21] WPIDS
DNN N2001-146782
TI Quantitative boron assay method for solid semiconductor **thin films**, involves measuring total amount of boron in film by secondary ion **mass spectrometry** process and standard **sample** by nuclear reaction process.
DC S02 S03 U11
PA (SONY) SONY CORP
CYC 1
PI JP 2001004564 A 20010112 (200121)* 6p
ADT JP 2001004564 A JP 1999-172844 19990618
PRAI JP 1999-172844 19990618
AB JP2001004564 A UPAB: 20010418

NOVELTY - The concentration (c) of microdose borons doped in the solid **thin film** of thickness (t) is determined by secondary ion **mass spectrometry** (SIMS) process, using specific formula Q=t multiply c, where Q' is total amount of boron in the film per unit area. The total amount of boron in the standard **sample** is measured by **analytical** curves obtained using nuclear reaction process.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the composition analyzing procedure of **thin film**.

USE - For analyzing concentration of boron in solid semiconductor **thin films** e.g. Si-Ge **film** during manufacture of semiconductor device.

ADVANTAGE - Raises **analysis** accuracy, as the standard **sample** curve is produced relevant to the actual area of specimen, precisely.

Dwg.1/4

L21 ANSWER 3 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-337429 [28] WPIDS
DNN N1999-252882 DNC C1999-099188
TI Releasing substrates into vacuum or gas phases useful for detecting molecular or particulate substances.
DC B04 D16 J04 S03 V05
IN GIESE, R; GEISE, R
PA (UYNE-N) UNIV NORTHEASTERN
CYC 21
PI WO 9922399 A2 19990506 (199928)* EN 27p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CA JP
US 5952654 A 19990914 (199944)
EP 1027719 A2 20000816 (200040) EN
R: DE ES FR GB IT
JP 2001521275 W 20011106 (200203) 32p

ADT WO 9922399 A2 WO 1998-US22182 19981021; US 5952654 A US 1997-960305
19971029; EP 1027719 A2 EP 1998-953783 19981021, WO 1998-US22182 19981021;
JP 2001521275 W WO 1998-US22182 19981021, JP 2000-518407 19981021
FDT EP 1027719 A2 Based on WO 9922399; JP 2001521275 W Based on WO 9922399
PRAI US 1997-960305 19971029
AB WO 9922399 A UPAB: 19990719

NOVELTY - A new method (M1) for releasing substrates into vacuum or gas phases comprises binding a substrate to an electrode via a cleavable release group and releasing by applying a charge via a second electrode.

DETAILED DESCRIPTION - M1 comprises:

(a) covalently or ligandly binding the substrate to the tip of a first electrode via a release group, where the release group is cleavable in response to applied energy;

(b) introducing an electrical field so as to establish a charge potential between the first electrode and a second electrode which is separated from the first electrode via a vacuum or gas phase, the strength of such field sufficient to bristle the covalently-bound or ligandly-bound substrate; and

(c) applying sufficient energy to the release group to cleave it and therefore release the substrate into a vacuum or gas phase.

INDEPENDENT CLAIMS are also included for the following:

(1) a method of releasing into a vacuum or gas phase a substrate covalently or ligandly bound to a first electrode via a release group, where the release group is cleavable in response to applied energy, comprising steps (b) and (c) of M1;

(2) a method of bristling a substrate covalently or ligandly bound to the tip of a first electrode, comprising:

(a) exposing the bound substrate to a vacuum or gas phase; and

(b) introducing an electrical field so as to establish a bristling charge potential between the first electrode and a second electrode separated by a vacuum or gas phase from the first electrode.

USE - The method can be used for releasing substrates such as e.g. nucleic acids, proteins, lipids, polysaccharides, microorganisms, and microscopic organic or inorganic particles (claimed). The substrates released can be analyzed by **mass spectrometry** (MS), e.g. for structural elucidation. The methods can also be used for e.g. altering electrode surfaces, for signaling, for microfabrication (e.g. to build up to change micro- or nanostructures), for information processing or storage, to detect molecular or particulate substances, or control the orientation of the substrate on the first electrode or landing surface to modify the **chemical** or physical behavior of the substrate or of the adjacent surface.

ADVANTAGE - By using the method, the **analysis** of substrates can be improved by reducing their adductions, increasing their signal strength, and achieving higher resolution.

DESCRIPTION OF DRAWING(S) - The diagram shows a first electrode.

anode screen (second electrode) 1
first electrode wire 2
insulating resin 3
anchor hole 4
metal plug 5
receptacle 6
ion guide 7
contact 8
thin film 9
Dwg.2/3

L21 ANSWER 4 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-192780 [17] WPIDS
DNN N1998-152607 DNC C1998-061656

TI Manufacture of continuous dynode for electron multiplier - comprises forming channel in substrate and forming current carrying **thin film** on wall portion of channel and overlying electron emissive portion(s).
DC E11 E12 L03 V05
IN HORTON, J R; TASKER, G W
PA (ADFI-N) CENT ADVANCED FIBEROPTIC APPL
CYC 1
PI US 5726076 A 19980310 (199817)* 17p
ADT US 5726076 A Cont of US 1989-395388 19890818, Div ex US 1993-89771 19930712, US 1994-365242 19941228
FDT US 5726076 A Div ex US 5378960
PRAI US 1989-395388 19890818; US 1993-89771 19930712; US 1994-365242 19941228
AB US 5726076 A UPAB: 19980428
Forming a continuous dynode for an electron multiplier, comprises: (i) forming at least one channel in a substrate which has a wall portion; and (ii) forming at least one **thin film** on the wall portion of the channel to produce a current carrying portion and an overlying electron emissive portion. The **thin film** is formed by at least one process selected from low pressure **chemical** vapour deposition (LPCVD), liquid phase deposition (LPD), and oxidation and nitriding.
USE - Used as detectors in scientific instrumentation for **mass spectrometry**, electron **spectroscopy** for surface **analysis**, electron microscopy, and vacuum UV and X-ray spectroscopy.
ADVANTAGE - The devices show emissive and conductive properties suitable for electron multiplication in channel electron multiplier (CEM), microchannel plates (MCP) and magnetic electron multiplier (MEM) applications.
Dwg.9/14

L21 ANSWER 5 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-460929 [43] WPIDS
DNN N1997-383657
TI Semiconductor test **samples** production method for **chemical analysis** - involves measuring thickness of semiconductor material from support substrate side after etching using secondary emission **mass spectroscopy**.
DC S03 U11
PA (NIDE) NEC CORP
CYC 1
PI JP 09210885 A 19970815 (199743)* 8p
ADT JP 09210885 A JP 1996-40671 19960202
PRAI JP 1996-40671 19960202
AB JP 09210885 A UPAB: 19971030
The method involves fixing a **sample** to a support substrate (4) using an adhesive agent (3). The **sample** is in the form of a **thin film** and is made of a different material. The substrate is made thin to avoid thermal stress.
Polishing and thermal etching are carried out. The thickness of the etched **sample** is measured from the support side using secondary ion **mass spectroscopy**. The junction between support substrate and specimen is sealed with wax.
ADVANTAGE - Prevents etchant damage to adhesive agent that fixes **sample** to the substrate. Reduces thermal shaft during fabrication. Maintains flatness of **sample**. Enables to find out impurity profile while thickness is measured.
Dwg.1/7

L21 ANSWER 6 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-244105 [25] WPIDS
DNN N1996-204773 DNC C1996-077505
TI Sec. ion **mass spectrometric analysis** of
impurity distribution on surface of semiconductor substrate - where oxide
film is removed by wet **chemical** etching, then material is dipped
in platinum soln. to form metal **thin film** to give
precise impurity distribution evaluation.
DC J04 L03 S03
PA (NIDE) NEC CORP
CYC 1
PI JP 08096740 A 19960412 (199625)* 4p
ADT JP 08096740 A JP 1994-254425 19940922
PRAI JP 1994-254425 19940922
AB JP 08096740 A UPAB: 19960625
Oxide film layer at surface of a **sample** of semiconductor
substrate is removed by wet **chemical** etching in advance, then
material is dipped in a plating soln. to form a surface coating layer made
of a metal **thin film**.
USE - Used for **analysis** of impurity distribution on surface
of semiconductor substrate.
ADVANTAGE - Allows precise evaluation of impurity distribution in
depth direction of surface cover layer of the substrate.
Dwg.1/5

L21 ANSWER 7 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1995-134870 [18] WPIDS
DNN N1995-106204
TI Semiconductor wafer mfr. and high highly sensitive impurity measurement -
involves forming second semiconductor substrate on first by etching cap
substrate so that semiconductor **thin film** is formed on
surface of first semiconductor substrate.
DC S03 U11
PA (SHHA) SHINETSU HANDOTAI KK
CYC 1
PI JP 07058304 A 19950303 (199518)* 9p
ADT JP 07058304 A JP 1993-217985 19930810
PRAI JP 1993-217985 19930810
AB JP 07058304 A UPAB: 19950518
The semiconductor wafer manufacturing method involves sticking a cap
substrate (11) on a surface (2) of a first semiconductor substrate (1).
The cap substrate has SOI structure and it has a Si layer (12) and a SiO
layer (13). Then a heat treatment is carried out in N2 atmosphere at a
temperature of 350deg.C for two hours. A junction wafer (21) is formed.
The etching of the cap substrate is carried out with a mixed solution of
hydrofluoric acid, nitric acid and pure water. The Si layer and SiO layer
are etched and a **thin film** Si layer (14) is formed on
the surface of the semiconductor substrate. A second semiconductor
substrate (31) is formed and it is analysed by SIMS.
ADVANTAGE - Avoids diffusion of impurity of semiconductor substrate
inside. Provides **analysis** of hydrogen. Prevents contamination of
semiconductor substrate surface. Avoids evaporation of substance during
sample production. Measures impurity of **sample** substrate
surface with sufficient accuracy. Provides measurement of light elements
such as C, Cl and F. Improves reproducibility of measurement data.
Dwg.1/7

L21 ANSWER 8 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1991-074690 [11] WPIDS

CR 1991-081584 [12]; 1991-089269 [13]
DNN N1991-057719 DNC C1991-031675
TI Preparing **thin film** of **analyte** for
examination - by laser desorption from surface e.g. of electrophoretic gel
plate, chromatography plate or bio sensor.
DC A89 B04 D16 J04 S03
IN GIESSMANN, U P; HILLENKAMP, F; KARAS, M; GIESSMANN, U
PA (FINN-N) FINNIGAN MAT GMBH
CYC 3
PI DE 4017805 A 19910307 (199111)* 5p
GB 2236186 B 19940105 (199401)
GB 2236185 B 19940323 (199409)
JP 2721029 B2 19980304 (199814) 6p
DE 4017805 C2 19980326 (199816) 5p
ADT DE 4017805 A DE 1990-4017805 19900601; GB 2236186 B GB 1990-18335
19900821; GB 2236185 B GB 1990-18334 19900821; JP 2721029 B2 JP
1990-220960 19900822; DE 4017805 C2 DE 1990-4017805 19900601
FDT JP 2721029 B2 Previous Publ. JP 03089160
PRAI DE 1989-3927602 19890822; DE 1989-3937165 19891108; DE 1990-4017805
19900601; DE 1989-3927603 19890822; DE 1989-3931288 19890920; DE
1990-4017804 19900601
AB DE 4017805 A UPAB: 19950102
In preparing an **analyte** for examination by binding the
analyte mols. to the surface of a prepn. in a 2-dimensional layer.
The is that the **analyte** mols. are desorbed from the surface by
laser desorption (claimed).
The prepn. is also treated with components for absorbing the laser
energy, pref. nicotinic acid; or the substrate consists of a substance
which absorbs laser radiation, pref. polycarbonate. The absorption
component can be applied before or after the **analyte**, pref. by
spraying, centrifuging or vacuum deposition. The **analyte** is
transferred (blotted) from another carrier, pref. using a nitrocellulose
substrate for the prepn. so that its arrangement is maintained. The
analyte mols. are bound to the surface of the prepn. by mols. of a
spacer, pref. propyl amine, or a spacer which absorbs laser light, pref.
L-3,5-dinitrobenzoylphenylglycine. The **analyte** mols. may be
SujCt lO D ChmiCl rCtiOn, pref. a prOteaSe fOr deradatiOn of proteins,
before laser desorption. The bond to the surface is loosened or broken
just before laser desorption. The @(5pp substrate consists of a substance
suitable for chromatographic or electrophoretic sepn. of a mixt. of
various **analytes** and sepn. is carried out before laser
desorption. For electrophoresis, the substrate pref. is polyacrylamide.
After sepn., the zones of different **analyte** mols. are scanned
consecutively with a laser, by moving the prepn. and laser ray relative to
one another, and irradiated with laser light.
USE/ADVANTAGE - The technique is useful for prepg. a monolayer of
analyte, e.g. on electrophoresis gel plates, chromatography plates
or biosensors for **analysis**, e.g. by **mass**
spectrometry. @(5pp Dwg.No.4/4)@

L21 ANSWER 9 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1990-293647 [39] WPIDS
DNN N1990-225689 DNC C1990-126677
TI New **analysis** of insulator for ion **mass**
spectrometry - by preparing insulator **sample**,
irradiating with beam of charged particle and analysing interaction
between charged particle and surface.
DC J04 S03 V05
PA (SUME) SUMITOMO ELECTRIC IND CO
CYC 1

PI JP 02205762 A 19900815 (199039)*
ADT JP 02205762 A JP 1989-26038 19890202
PRAI JP 1989-26038 19890202
AB JP 02205762 A UPAB: 19930928
The **analysis** comprises preparing an insulator **sample** provided with a conductive element to at least a part of periphery of the surface of the **sample** to be analysed; irradiating the surface part with beam of charged particle; and analysing component elements of the **sample** qualitatively and/or quantitatively by observing the interaction between the charged particle and the surface.
Pref. insulator **sample** is GaAs, ZnSe, Zns, MgO, SiO2, ZrO2, Al2O3, Si3N4. Conductive elements C, Au, Ti, Al, Pt, Ag, Cu; **thin film** formed on the surface of the **sample** (at least 10 mm thickness) except the surface part to be analysed (less than 2x2 mm).
USE/ADVANTAGE - The **analysis** is used for Auger electron **spectroscopy**, sec. ion **mass spectrometry**, electron probe microanalyser, etc. It provides a new and efficient method for preventing charge of the **sample**. @
1,2/2@

L21 ANSWER 10 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1990-127898 [17] WPIDS
DNN N1990-098990 DNC C1990-056314
TI Pretreatment of **sample** for **mass spectrometry** - with acid or base, increasing prodn. efficiency of quasi-mol. particles.
DC J04 S03
PA (NITE) NIPPON TELEGRAPH & TELEPHONE CORP
CYC 1
PI JP 02075950 A 19900315 (199017)*
ADT JP 02075950 A JP 1988-228070 19880912
PRAI JP 1988-228070 19880912
AB JP 02075950 A UPAB: 19930928
Acid or base is added to a **thin film sample** for **mass spectrometry**, and then it is analysed. The acid supplies protons to the **sample**, and the base receives protons from the **sample**.
Accelerated ions and laser light are radiated to the **sample**, and the generated ions are detected. The kinds and amts of the cpds in the **sample** are analysed from the above measurement.
USE/ADVANTAGE - Used for the pretreatment of the **sample** for **mass spectrometry**. The **sample** is organic materials. The prodn efficiency of quasi-mol is increased, so the structural **analysis** of the **sample** is improved.
0/3

L21 ANSWER 11 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1989-102440 [14] WPIDS
DNN N1989-077898 DNC C1989-045165
TI Detection of defects in nickel-phosphorus plated films - involves comparing compsn. of defective part with compsn. of normal part, by e.g. electron probe micro **analysis**.
DC L03 S03 T03 V02
PA (HITA) HITACHI LTD
CYC 1
PI JP 01047876 A 19890222 (198914)* 4p
ADT JP 01047876 A JP 1987-199785 19870812
PRAI JP 1987-199785 19870812
AB JP 01047876 A UPAB: 19930923
In the Ni-P film produced on a substrate using electroless plating, the defect is detected by utilising difference in compsn. as compared with the

normal pt.

Specifically, the concn. difference of Ni and/or P is utilised. The plated film is first polished, and then subjected to elemental **analysis**. Electron Probe Micro **Analysis**, Auger **spectroscopy**, secondary ion **mass spectroscopy**, or X-ray photoelectron spectroscopy are pref. **analytical** methods used.

USE/ADVANTAGE - Provides a detection method for **thin-film** magnetic discs; enables detection of defects which was impossible with known methods based on the shape difference.

0/2

L21 ANSWER 12 OF 12 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1988-037182 [06] WPIDS
DNN N1988-028174 DNC C1988-016505
TI Multicomponent **thin film** prodn. appts. - has ion beam sputtering unit and specimen and target **analysis** unit.
DC M13 P62 S03 T03 U11 V02 V05
IN HEINDEL, H P; SCHRIJNER, P; WELLER, D
PA (SIEI) SIEMENS AG
CYC 1
PI DE 3625700 A 19880204 (198806)* 7p
DE 3625700 C 19891228 (199001)
ADT DE 3625700 A DE 1986-3625700 19860730
PRAI DE 1986-3625700 19860730
AB DE 3625700 A UPAB: 19930923

Appts. for prodn. of multi-component films has an ion beam sputtering unit, contg. several sputtering sources and targets, and an **analysis** unit, arranged in a common ultra-high vacuum system.

Two units are combined by a transfer-mechanism, consisting of a precision manipulator (2), a gripper arm (12) and a rotary slide manipulator (40), and that the **analysis** unit (30) is provided with an electron spectrometer (32), associated with an x-ray photo-emission source (34) and an electron source (36) and a secondary ion **mass spectrometer** (56), associated with an ion source (54).

USE/ADVANTAGE - The appts. is useful for prodn. of magnetic storage **thin films** of various metallic, semiconductor or insulator compsns. It allows simultaneous **analysis** of specimens and targets.

1/3

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=> fil biosis
FILE 'BIOSIS' ENTERED AT 12:49:21 ON 04 MAR 2002
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 21 February 2002 (20020221/ED)


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     (FILE 'WPIDS' ENTERED AT 12:36:00 ON 04 MAR 2002)
                DEL HIS Y

     FILE 'BIOSIS' ENTERED AT 12:45:06 ON 04 MAR 2002
L1          2230 S THIN (3A) FILM#
L2         68637 S MASS  (2W) (SPECTROSC? OR SPECTROM?)
L3            56 S L1 AND L2
L4          3288 S TIME (3W) FLIGHT
L5            10 S L3 AND L4
L6           188 S COLUMN## (3A) VOID?
L7             0 S L1 AND L6
L8        485376 S ANALYTE? OR SAMPLE#
L9            24 S L3 AND L8
L10      1134757 S ANALYSIS
L11           30 S L10 AND L3
L12           37 S L11 OR L9
L13           30 S L12 NOT L5

     FILE 'BIOSIS' ENTERED AT 12:49:21 ON 04 MAR 2002

=> d bib ab it l5 1-10;d bib ab it l13 1-30
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L5   ANSWER 1 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN   2001:491797 BIOSIS
DN   PREV200100491797
TI   Development of silicon microstructures and **thin-film**
     MALDI target plates for automated proteomics sample identifications.
AU   Miliotis, Tasso; Marko-Varga, Gyorgy; Nilsson, Johan; Laurell, Thomas (1)
CS   (1) Department of Electrical Measurements, Lund Institute of Technology,
     SE-221 00, Lund: thomas.laurell@elmat.lth.se Sweden
SO   Journal of Neuroscience Methods, (15 August, 2001) Vol. 109, No. 1, pp.
     41-46. print.
     ISSN: 0165-0270.
DT   Article
LA   English
SL   English
AB   Here we report on the development of a proteomic platform utilizing a
     piezoelectric flow-through dispensing unit made from silicon
     microstructures. The use of a novel surface coating, where matrix-assisted
     laser desorption/ionisation **time-of-flight**
     mass spectrometry (MALDI MS) targets were uniformly
     precoated with a **thin film** of matrix/nitrocellulose,
     made the sample preparation straightforward and enabled the enrichment and
     analysis of proteins at low levels in proteomics samples. We demonstrate
     this by analyzing excised spots in a biological sample originating from a

human fetal fibroblast cell line that was subjected to 2D gel-electrophoresis. Furthermore, a sample deposition rate below 30 Hz results in an increased analyte density on the dispensed sample spot, rendering signal amplification. In general, the sensitivity for proteins and peptides can be enhanced 10-50 times compared to traditional MALDI sample preparation techniques.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques; Nervous System (Neural Coordination)

IT Chemicals & Biochemicals
ammonium bicarbonate: Sigma Chemical Co.; angiotensin III: Sigma Chemical Co.; bradykinin: Sigma Chemical Co.; matrix/nitrocellulose; peptides; proteins

IT Methods & Equipment
Voyager DE-PRO: Perseptive Biosystems, laboratory equipment; automated proteomics sample identification: Molecular Biology Techniques and Chemical Characterization, identification method; matrix-assisted laser desorption/ionization **time-of-flight mass spectrometry** [MALDI MS]: Spectrum Analysis Techniques, analytical method; nitrocellulose membrane: Bio-Rad, laboratory equipment; piezoelectric flow-through dispensing unit: laboratory equipment; silicon microstructures: development, laboratory equipment; **thin-film** matrix-assisted laser desorption/ionization **time-of-flight mass spectrometry** target plates: development, laboratory equipment; two-dimensional gel-electrophoresis: analytical method, polyacrylamide gel electrophoresis

IT Miscellaneous Descriptors
analyte density; sample deposition rate; signal amplification

RN 1066-33-7 (AMMONIUM BICARBONATE)
12687-51-3 (ANGIOTENSIN III)
58-82-2 (BRADYKININ)

L5 ANSWER 2 OF 10 BIOSIS

AN 2001:486138 BIOSIS

DN PREV200100486138

TI Plasma lithography: **Thin-film** patterning of polymers by RF plasma polymerization II: Study of differential binding using adsorption probes.

AU Goessl, Andreas; Golledge, Stephen L.; Hoffman, Allan S. (1)

CS (1) Department of Bioengineering, University of Washington, Seattle, WA, 98195: hoffman@u.washington.edu USA

SO Journal of Biomaterials Science Polymer Edition, (2001) Vol. 12, No. 7, pp. 739-753. print.
ISSN: 0920-5063.

DT Article

LA English

SL English

AB In this study we present methods to physico-chemically modify micropatterned cell culture substrates that were manufactured using plasma lithography to incorporate affinity structures for specific cell binding. The surfaces consist of a pattern of a fluorocarbon plasma polymer with feature sizes between 5 and 100 mum on a background of a non-fouling tetraglyme (tetraethylene glycol dimethyl ether) plasma polymer. The tetraglyme polymer blocks virtually all non-specific binding of proteins, and it is non-adhesive for a fluorocarbon-polyethyleneglycol (FC-PEG) surfactant designed to act as a 'hydrophobic anchor' for peptides. The surfactant shows a strong affinity for the fluorocarbon polymer pattern, thus enabling us to form a pattern of the surfactant-conjugated peptide.

To verify this, we have synthesized a conjugate between histamine (as a model for a more complex peptide) and a commercially available FC-PEG surfactant. Disuccinimidyl carbonate was used to activate the terminal -OH group of the polyethylene glycol headgroup for the reaction with the amine-containing molecule. Affinity pattern formation can easily be achieved by immersion of the patterned substrates in a solution of the peptide-surfactant conjugate. **Time** of **flight** secondary ion **mass spectroscopy** in the imaging mode was used to verify that the surfactant localizes on the pattern, while the background remains bare. A model protein, bovine serum albumin, showed the same behavior. This suggests that these surfaces can be used for the formation of patterns of cell-adhesive proteins. These substrates will be used to investigate the influence of the cell size and shape of vascular smooth muscle cells on their physiology.

IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Parts, Structures, & Systems of Organisms
vascular smooth muscle cells: circulatory system, muscular system
IT Chemicals & Biochemicals
adsorption probes; bovine serum albumin; cell-adhesive proteins; disuccinimidyl carbonate; fluorocarbon plasma polymer; fluorocarbon-polyethylene glycol surfactant [FC-PEG surfactant]: hydrophobic anchor; histamine; non-fouling tetraglyme plasma polymer [tetraethylene glycol dimethyl ether]; peptides; polymers: **thin -film** patterning; surfactant-conjugated peptide
IT Methods & Equipment
RF plasma polymerization: molecular method; plasma lithography: analytical method; **time** of **flight** secondary ion **mass spectroscopy**: analytical method, imaging method
IT Miscellaneous Descriptors
affinity pattern formation; cell shape; cell size; differential binding
RN 74124-79-1 (DISUCCINIMIDYL CARBONATE)
51-45-6 (HISTAMINE)
143-24-8 (TETRAETHYLENE GLYCOL DIMETHYL ETHER)

L5 ANSWER 3 OF 10 BIOSIS
AN 2000:75834 BIOSIS
DN PREV200000075834
TI Template recognition of protein-imprinted polymer surfaces.
AU Shi, Huaiqiu; Ratner, Buddy D. (1)
CS (1) Department of Bioengineering, University of Washington, Seattle, WA USA
SO Journal of Biomedical Materials Research, (Jan., 2000) Vol. 49, No. 1, pp. 1-11.
ISSN: 0021-9304.
DT Article
LA English
SL English
AB Synthetic materials capable of specifically recognizing proteins are important in separations, biosensors, and biomaterials. In this study, polysaccharide-like surfaces with tailored protein-binding nanocavities were prepared by a novel templating approach based on radiofrequency plasma deposition of **thin films**. The template-imprinted proteins included albumin, immunoglobulin, fibrinogen, lysozyme, ribonuclease A, alpha-lactalbumin, and glutamine synthetase. Transmission electron microscopy showed that nanometersized "pits" in the shape of imprinted protein were formed on the surfaces of template-imprinted polymer films. Electron spectroscopy for chemical analysis and **time**-of-**flight** secondary ion **mass spectrometry** indicated the saccharide covering of imprint surfaces

and the removal of template proteins. 125I-labeled protein adsorption from single solutions showed a similar amount of protein was adsorbed to its own imprint as to the imprint of another protein. However, more protein remained on the former surface than on the latter following elution with the detergents Tween 20 or sodium dodecyl sulfate. Competitive adsorption of a binary protein mixture showed a highly preferential adsorption of template protein to the corresponding imprint. This template recognition diminished as the number of protein-imprinted pits decreased. Structurally unstable proteins such as alpha-lactalbumin exhibited weaker template recognition that "robust" proteins such as lysozyme. The hypothesis that protein recognition is due to complementarity between the protein and its imprinted nanopit was supported by protein turnover experiments that showed template protein adsorbed to its own imprint was less readily displaced by a nontemplate protein.

IT Major Concepts
  Enzymology (Biochemistry and Molecular Biophysics); Biomaterials
IT Chemicals & Biochemicals
  SDS; albumin; alpha-lactalbumin; fibrinogen; glutamine synthetase; immunoglobulin; lysozyme; protein; ribonuclease A; tween 20
IT Methods & Equipment
  electron spectroscopy; transmission electron microscopy
IT Miscellaneous Descriptors
  protein-imprinted polymer surfaces
RN 9023-70-5 (GLUTAMINE SYNTHETASE)
  9001-63-2 (LYSOZYME)
  9001-99-4 (RIBONUCLEASE A)
  9005-64-5 (TWEEN 20)

L5 ANSWER 4 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2000:33834 BIOSIS
DN PREV200000033834
TI Insight into absorption of radiation/energy transfer in infrared matrix-assisted laser desorption/ionization: The roles of matrices, water and metal substrates.
AU Talrose, Victor L.; Person, Maria D.; Whittal, Randy M.; Walls, Fred C.; Burlingame, Alma L.; Baldwin, Michael A. (1)
CS (1) Mass Spectrometry Facility, Department of Pharmaceutical Chemistry, University of California, San Francisco, CA, 94143-0446 USA
SO Rapid Communications in Mass Spectrometry, (1999) Vol. 13, No. 21, pp. 2191-2198.
  ISSN: 0951-4198.
DT Article
LA English
SL English
AB Although the ionization/desorption mechanisms in matrix-assisted laser desorption/ionization (MALDI) remain poorly understood, there is a clear difference between the energy absorption processes in the ultraviolet (UV) and infrared (IR) modes of operation. UV-MALDI demands an on-resonance electronic transition in the matrix compound, whereas results presented here support earlier work showing that a corresponding resonant vibrational transition is not a requirement for IR-MALDI. In fact, data from the present study suggest that significant absorption of radiant energy by a potential matrix impairs its performance, although this observation is at variance with some other reports. For example, sinapinic acid, with an IR absorption maximum close to the 2.94 mum wavelength of the Er-YAG laser, has been little used as an IR-MALDI matrix. By contrast, succinic acid, with much lower IR absorption and no history of use in UV-MALDI as it has no UV absorption at the wavelength of common UV lasers, has become widely recognized as a good general purpose matrix for IR-MALDI. Despite reports by others that glycerol is an effective matrix

for IR-MALDI, we find that glycerol, which also absorbs strongly at 2.94 mum, is useful only if applied as a very **thin film**.
Thus the cumulative evidence for the role of the matrix in IR-MALDI appears confusing and often contradictory. Water has been postulated to be a major contributor to the absorption of energy in IR-MALDI. Consistent with this, we find that samples dried from D2O, which does not absorb at 2.94 mum, give spectra of inferior quality compared with the same samples from H2O. Similarly, samples dried under vacuum, that probably contain less water than those dried in the open laboratory, give weaker and more erratic spectra. Another potential participant in energy absorption and energy transfer is the surface of the metal support, an alternative mechanism for IR-MALDI, for which some evidence is presented here.

IT Major Concepts
   Chemistry; Methods and Techniques
IT Chemicals & Biochemicals
   CZE mix: Biorad, analysis; glycerol: matrix; metal substrates; sinapinic acid: matrix; succinic acid: matrix; water
IT Methods & Equipment
   Fourier transform IR spectroscopy: IR spectrophotometry: CB, analytical method; IR matrix-assisted laser/desorption ionization **mass spectrometry**: analytical method, spectroscopic techniques: CB; PE Biosystems Voyager DE STR **time**-of-**flight** **mass spectrometer**: equipment; Perkin Elmer System 2000 spectrophotometer: equipment
RN 56-81-5 (GLYCEROL)
   530-59-6 (SINAPINIC ACID)
   110-15-6 (SUCCINIC ACID)
   7732-18-5 (WATER)

L5 ANSWER 5 OF 10 BIOSIS
AN 1999:481892 BIOSIS
DN PREV199900481892
TI Silver cationization of thia fatty acids and esters in laser desorption/ionization **time**-of-**flight mass spectrometry**.
AU Owega, Sandy; Lai, Edward P. C. (1)
CS (1) Department of Chemistry, Ottawa-Carleton Chemistry Institute, Carleton University, 1125 Colonel By Drive, Ottawa, ON, K1S 5B6 Canada
SO Journal of Mass Spectrometry, (Aug., 1999) Vol. 34, No. 8, pp. 872-879.
   ISSN: 1076-5174.
DT Article
LA English
SL English
AB A laser desorption/ionization (LDI) **time**-of-**flight** **mass spectrometric** (TOF-MS) technique was used for the molecular mass analysis of thia fatty acids and esters, samples without appreciable light absorption at the laser wavelength. After a sample overlayer is deposited by solvent evaporation on a **thin** silver **film** substrate, it is subjected to 355 or 532 nm Nd : YAG laser irradiation. Photoablation of the Ag film substrate occurs with sufficient laser fluence, producing silver cluster cations, which can react with the desorbed thia fatty acid or ester molecules in the gas phase. Silver cation attachment of thia fatty esters may produce a silver-cationized analyte and fragments of structural diagnostic value, whereas thia fatty acids would not. With oxygen(s) present on the sulfur in sulfoxy fatty acids and esters, a silver-cationized analyte and additional fragments are produced. Formation of these fragments is consistent with charge-remote mechanisms through simple cleavage and rearrangement pathways. The structural reactivity of these compounds with ablated silver cations is hence comprehensively analyzed.

IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
silver ions; thia fatty acid esters: analysis, molecular characteristics, silver cationization; thia fatty acids: analysis, silver cationization, molecular characteristics
IT Methods & Equipment
laser desorption/ionization **time-of-flight** **mass spectrometry**: analytical method, spectroscopic techniques: CB
IT Miscellaneous Descriptors
pathology; silver ion chemical ionization
RN 14701-21-4 (SILVER IONS)

L5 ANSWER 6 OF 10 BIOSIS
AN 1999:241314 BIOSIS
DN PREV199900241314
TI Synthesis and characterization of a photoactivatable glycoaryldiazirine for surface glycoengineering.
AU Chevolot, Yann (1); Bucher, Odile; Leonard, Didier; Mathieu, Hans Jorg; Sigrist, Hans
CS (1) Departement des Materiaux, LMCH, Ecole Polytechnique Federale de Lausanne (EPFL), CH-1015, Lausanne Switzerland
SO Bioconjugate Chemistry, (March-April, 1999) Vol. 10, No. 2, pp. 169-175. ISSN: 1043-1802.
DT Article
LA English
SL English
AB Biological systems make considerable use of specific molecular interactions. Many biomolecules involved in biorecognition are glycosylated, the carbohydrate moiety playing an essential role. Controlled surface glycoengineering is thus of crucial importance in biosensing, cell guidance, and biomedical applications. This study describes the synthesis of an aryldiazirine-derivatized galactose and the functionalization of surfaces by carbohydrates using photochemical immobilization techniques. A photoactivatable glycosylated reagent was synthesized by addition of thiogalactopyranose to the maleimide group of N-(m-(3-(trifluoromethyl)diazirin-3-yl)phenyl)-4-maleimidobutyramide (MAD) to give N-(m-(3-(trifluoromethyl)diazirin-3-yl)phenyl)-4-(3-thio (1-D-galactopyranosyl)succinimidyl)butyramide (MAD-Gal). The structure of the newly synthesized molecule was confirmed by UV spectroscopy, photoactivation, 1H NMR, and 13C NMR. MAD-Gal was immobilized on **thin** diamond **films** by photoactivation of the diazirine function (350 nm). Surface modification was investigated by XPS (X-ray photoelectron spectroscopy) and ToF-SIMS (**time-of-flight** secondary ion **mass spectrometry**). Imaging ToF-SIMS was applied to detect glycopatterns generated by mask-assisted lithography.
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
photoactivable glycoaryldiazirine: characterization, synthesis
IT Methods & Equipment
carbon-13 NMR: analytical method, spectroscopic techniques: CB; chemical synthesis: Synthesis/Modification Techniques, synthetic method; proton NMR: analytical method, spectroscopic techniques: CB; **time-of-flight** secondary ion **mass spectrometry** equipment: PHI-EVANS & Associates, laboratory equipment; **time-of-flight** secondary ion **mass spectrometry**: analytical method, spectroscopic techniques: CB; Bruker 500 MHz NMR: Bruker, laboratory equipment; PHI

5500 system: Perkin-Elmer, laboratory equipment; UV spectroscopy: analytical method, spectroscopic techniques: CB; X-ray photoelectron spectroscopy: analytical method, spectroscopic techniques: CB

IT Miscellaneous Descriptors
surface glycoengineering

L5 ANSWER 7 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1998:442737 BIOSIS
DN PREV199800442737
TI **Time-of-flight mass spectrometry** of bioorganic molecules by laser ablation of silver **thin film** substrates and particles.
AU Lai, Edward P. C. (1); Owega, Sandy; Kulczycki, Rafal
CS (1) Ottawa-Carleton Chem. Inst., Dep. Chem., Carleton Univ., Ottawa, ON K1S 5B6 Canada
SO Journal of Mass Spectrometry, (June, 1998) Vol. 33, No. 6, pp. 554-564. ISSN: 1076-5174.
DT Article
LA English
AB A laser desorption/ionization (LDI) technique, which uses laser ablation of a **thin** silver **film** substrate under vacuum conditions to desorb and ionize bioorganic molecules, was developed for molecular mass and structural reactivity analysis in **time**-of-**flight mass spectrometry** (TOF-MS). After a sample overlayer is deposited by solvent evaporation on a **thin** silver **film** substrate, it is subjected to 355 or 532 nm Nd:YAG laser light by back-irradiation. Photoablation of the silver film substrate occurs with sufficient laser fluence, producing Agn+ (n = 1-9) cluster cations which can react with the desorbed bioorganic molecules in the gas phase to form M+ or (M + H)+ and (M + Ag)+ ions for TOF-MS analysis. This LDI technique has been successfully applied to dithizone, benzo(e)pyrene, 1,4,8,11-tetraazocyclotetradecane, dicyclohexyl-18-crown-6, (5)-helicene dendrimer, gramicidin S, substance P and melittin. One advantage of this method over conventional LDI techniques is that the sample does not need to have appreciable spectral absorption at the laser wavelength. The use of silver in **thin-film** substrates affords analyte-dependent efficiencies that may serve for the direct and accurate mass analysis of specific groups of bioorganic molecules in sample mixtures. In a new sample preparation method, gramicidin S is added to a Tollen's reagent mixture for direct impregnation on to silver particles during their formation and growth in the colloidal solution. These silver particles provide a silver matrix for the analyte molecules, which can enhance the LDI efficiency to produce greater (M + H+ and (M + Ag)+ signals.
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
aluminum film: Lumonics Optics Group; benzo[e]pyrene: Aldrich, ionization, analysis; bioorganic molecules: analysis, ionization; dicyclohexyl-18-crown-6: Aldrich, analysis, ionization; dithizone: Aldrich, analysis, ionization; gold film: Lumonics Optics Group; gramicidin S: Sigma, ionization, analysis; melittin: Sigma, analysis, ionization; silver particles: Lumonics Optics Group, analysis; silver **thin film** substrate: Lumonics Optics Group, analysis; substance P: Sigma, analysis, ionization; [5]-helicene dendrimer: analysis, ionization; 1,4,8,11-tetraazocyclotetradecane: Aldrich, analysis, ionization
IT Methods & Equipment
laser ablation: detection method, detection/labeling techniques; laser desorption/ionization technique: analysis/characterization techniques:

CB, analytical method, molecular method; **time**-of-
flight mass spectrometer: laboratory
equipment; **time**-of-**flight mass**
spectrometry: analytical method, spectroscopic techniques: CB;
Nd:YAG laser: Lumonics, laboratory equipment

RN 7440-22-4 (SILVER)
60-10-6 (DITHIZONE)
192-97-2 (BENZO(E)PYRENE)
113-73-5 (GRAMICIDIN S)
33507-63-0 (SUBSTANCE P)
20449-79-0Q (MELITTIN)
37231-28-0Q (MELITTIN)
7440-57-5 (GOLD)
7429-90-5 (ALUMINUM)

L5 ANSWER 8 OF 10 BIOSIS

AN 1997:42834 BIOSIS

DN PREV199799334822

TI Accurate mass measurement of oligonucleotides using a time-lag focusing matrix-assisted laser desorption/ionization **time**-of-**flight mass spectrometer**.

AU Dai, Yuquin; Whittal, Randy M. (1); Li, Liang (1); Weinberger, Scot R.

CS (1) Dep. Chem., Univ. Alberta, Edmonton, AB T6G 2G2 Canada

SO Rapid Communications in Mass Spectrometry, (1996) Vol. 10, No. 14, pp. 1792-1796.
ISSN: 0951-4198.

DT Article

LA English

AB A method for accurate mass measurement of oligonucleotides up to a DNA 35-mer based on matrix-assisted laser desorption/ionization (MALDI) **mass spectrometry** is described. In this method, a time-lag focusing **time**-of-**flight mass spectrometer** is used to achieve high mass resolution to resolve adduct ions that often complicate the mass analysis of oligonudeotides. Mass resolutions between 1170 and 1300 (full width at half maximum) for a 17-mer, 23-mer, and 35-mer are obtained using a 1 m linear **time**-of-**flight** instrument with a total sample loading of less than 10 pmol. The effects of sample preparation, type of calibrant and matrix used on the accuracy of mass measurement, based on external calibration, are discussed. A sample preparation protocol that forms a **thin film** of matrix and sample crystals on a MALDI probe is described. It is shown that mass measurement error less than 100 ppm with reproducibility better than +- 60 ppm can be obtained with either proteins or DNA fragments as external calibrants. Accurate mass measurement for a mixture of DNA fragments is also illustrated.

IT Major Concepts
Biochemistry and Molecular Biophysics; Genetics; Methods and Techniques; Radiology (Medical Sciences)

IT Miscellaneous Descriptors
ANALYTICAL METHOD; DNA FRAGMENTS; INSTRUMENT; MASS MEASURING; METHODOLOGY; MOLECULAR GENETICS; OLIGONUCLEOTIDES; TIME-LAG FOCUSING MATRIX-ASSISTED LASER DESORPTION/IONIZATION **TIME**-OF-**FLIGHT MASS SPECTROMETER**

L5 ANSWER 9 OF 10 BIOSIS

AN 1993:47390 BIOSIS

DN PREV199395023692

TI **Mass spectrometry** of DNA mixtures by laser ablation from frozen aqueous solution.

AU Schieltz, David M.; Chou, Chau-Wen; Luo, Cong-Wen; Thomas, Robert M.;

Williams, Peter (1)
CS (1) Dep. Chemistry Biochemistry, Ariz. State Univ., Tempe, Ariz. 85287-1604 USA
SO Rapid Communications in Mass Spectrometry, (1992) Vol. 6, No. 10, pp. 631-636.
ISSN: 0951-4198.
DT Article
LA English
AB We report **time-of-flight** mass spectra of test mixtures of six single-stranded DNA segments. The segments range in size from 8 to 60 nucleotides (molecular weight range 2413 to 18,602 Da). The best mass spectra were obtained by pulsed laser ablation of **thin** frozen **films** of an aqueous solution of the mixture from an oxidized copper substrate. These mass spectra are dominated by the molecular-ion peak for each DNA segment, and show little evidence of fragmentation, peak broadening or cluster formation. In contrast, mass spectra obtained using UV laser ablation from an anthranilic acid matrix yield broad peaks with evidence of fragmentation, and DNA segments longer than 26 nucleotides are difficult to detect.
IT Major Concepts
Genetics; Methods and Techniques
IT Miscellaneous Descriptors
ANALYTICAL METHOD; UV LASER ABLATION

L5 ANSWER 10 OF 10 BIOSIS
AN 1987:226407 BIOSIS
DN BA83:114577
TI DETERMINATION OF PHENYLTHIOHYDANTOIN-AMINO ACIDS BY TWO-STEP LASER DESORPTION-MULTIPHOTON IONIZATION.
AU ENGELKE F; HAHN J H; HENKE W; ZARE R N
CS DEP. CHEMISTRY, STANFORD UNIV., STANFORD, CALIF. 94305.
SO ANAL CHEM, (1987) 59 (6), 909-912.
CODEN: ANCHAM. ISSN: 0003-2700.
FS BA; OLD
LA English
AB The 20 primary phenylthiohydantoin (PTH)-amino acids can be detected and quantitated by **time-of-flight** (TOF) **mass spectrometry** using a two-step laser methodology. First a CO2 laser pulse desorbs the PTH-amino acid or a mixture thereof prepared as a **thin film** on the inside wall of a rotating glass cup. The latter is part of the first electrode of the TOF apparatus. The desorption process is demonstrated to be essentially complete in the laser spot area. After a suitable time delay, a second UV laser pulse (266 nm) causes 1 + 1 resonance-enhanced multiphoton ionization (REMPI) of the neutral cloud of desorbed molecules. The mass spectra obtained are dominated by the parent ion peak in almost all cases. Knowledge of the velocity distribution permits flux measurement. The ion signal is linear in PTH-amino acid concentration in the range of picomoles to nanomoles. The is the first demonstration of quantitative analysis of molecules by laser desorption/multiphoton ionization.

L13 ANSWER 1 OF 30 BIOSIS
AN 2002:135881 BIOSIS
DN PREV200200135881
TI Gas chromatography/**mass spectrometry** demonstration of steryl glycosides in eucalypt wood, Kraft pulp and process liquids.
AU Gutierrez, Ana; Del Rio, Jose C. (1)

CS (1) IRNAS-CSIC, 41080, Seville: delrio@irnase.csic.es Spain
SO Rapid Communications in Mass Spectrometry, (2001) Vol. 15, No. 24, pp. 2515-2520. print.
ISSN: 0951-4198.
DT Article
LA English
AB The occurrence of steryl glycosides (SG) and acyl steryl glycosides (ASG) in eucalypt (Eucalyptus globulus) wood has been investigated. These compounds were analyzed as their trimethylsilyl ethers by gas chromatography/**mass spectrometry** (GC/MS) using a 15 m length high-temperature capillary column with a **thin film**, and identified on basis of their mass spectra and relative retention times comparing with those of authentic standards. Significant amounts of SG were identified in eucalypt wood whilst only traces of ASG could be detected. Eucalypt SG and ASG occur in the pyranoside form, which is readily distinguishable from the furanoside configuration by the mass spectra of their trimethylsilyl derivatives. The sterol part of the SG and ASG consisted of sitosterol, being sitosteryl 3beta-D-glucopyranoside and sitosteryl (6'-O-palmitoyl)-3beta-D-glucopyranoside, the major SG and ASG found in E. globulus wood. The presence of SG and ASG was also investigated after kraft cooking by analyzing unbleached pulp and process water **samples**. The GC/MS results also revealed the presence of sitosteryl 3beta-D-glucopyranoside in these **samples**. By contrast, no ASG could be detected. Therefore, we have shown that SG survive the kraft cooking and can be found at least partly intact after pulping, being a possible cause for pitch deposits together with free and esterified sterols.

IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals
acyl steryl glycosides; esterified sterols; free sterols; furanoside; process liquids; pyranoside; sitosterol; sitosteryl (6'-O-palmitoyl)-3-beta-D-glucopyranoside; sitosteryl 3-beta-D-glucopyranoside: Matreya, Inc.; steryl glycosides; trimethylsilyl ethers

IT Methods & Equipment
Model Voyager quadrupole **mass spectrometer** detector: ThermoQuest Finnigan, laboratory equipment; fused-silica capillary column: J&W, laboratory equipment; gas chromatograph: ThermoQuest Finnigan, laboratory equipment; gas chromatography/ **mass spectrometry** [GC/MS]: Chromatographic Techniques, Spectrum **Analysis** Techniques, analytical method; high-temperature capillary column: laboratory equipment

IT Miscellaneous Descriptors
ENCE pulp mill; kraft pulp; wood

ORGN Super Taxa
Myrtaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae

ORGN Organism Name
Eucalyptus globulus [eucalypt] (Myrtaceae)

ORGN Organism Superterms
Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants

L13 ANSWER 2 OF 30 BIOSIS
AN 2001:486137 BIOSIS
DN PREV200100486137
TI Plasma lithography: **Thin-film** patterning of polymeric biomaterials by RF plasma polymerization I: Surface preparation and **analysis**.
AU Goessl, Andreas; Garrison, Michael D.; Lhoest, Jean-Benoit; Hoffman, Allan S. (1)

CS (1) Department of Bioengineering, University of Washington, Seattle, WA, 98195: hoffman@u.washington.edu USA
SO Journal of Biomaterials Science Polymer Edition, (2001) Vol. 12, No. 7, pp. 721-738. print.
ISSN: 0920-5063.
DT Article
LA English
SL English
AB Plasma lithography, combining plasma deposition with photolithography, is described as a versatile method to manufacture all-polymeric substrates with **thin-film** patterns for applications in biomedical engineering. Patterns of a hydrophobic fluorocarbon plasma polymer with feature sizes between 5 and 100 mum were deposited on a base substrate in a lift-off process; an intermediate tetraglyme plasma polymer layer provides non-fouling properties to the base substrate. Careful **analysis** of critical process parameters identified the narrow window of process conditions that led to the formation of functional surface patterns. High pattern fidelity, aspect ratios, and resolution of the patterns are demonstrated by atomic force microscopy. Electron spectroscopy for chemical **analysis** (ESCA) and secondary ion **mass spectroscopy** (SIMS) were used to characterize the surfaces, showing good retention of the original chemical structure of the pattern components throughout the process. SIMS imaging was used for specific chemical imaging of the components. Potential applications for the patterned polymer films, e.g., for studying cell behavior in vitro in dependence of shape and size of adhering cells, are discussed.
IT Major Concepts
Biomaterials; Methods and Techniques
IT Chemicals & Biochemicals
hydrophobic fluorocarbon plasma polymer; tetraglyme plasma polymer
IT Methods & Equipment
atomic force microscopy: analytical method, microscopy: CB, microscopy: CT; electron spectroscopy for chemical **analysis**: analytical method; plasma lithography: analytical method; secondary ion **mass spectroscopy**: analytical method; surface preparation: preparation method
IT Miscellaneous Descriptors
aspect ratios; biomedical engineering; cell behavior; high pattern fidelity; pattern resolution; polymeric biomaterials: **thin-film** patterning

L13 ANSWER 3 OF 30 BIOSIS
AN 2001:406498 BIOSIS
DN PREV200100406498
TI Control of shape and size of vascular smooth muscle cells in vitro by plasma lithography.
AU Goessl, Andreas; Bowen-Pope, Daniel F.; Hoffman, Allan S. (1)
CS (1) Department of Bioengineering, University of Washington, Seattle, WA, 98195: hoffman@u.washington.edu USA
SO Journal of Biomedical Materials Research, (October, 2001) Vol. 57, No. 1, pp. 15-24. print.
ISSN: 0021-9304.
DT Article
LA English
SL English
AB The ability to control the shape and size of cells is an important enabling technique for investigating influences of geometrical variables on cell physiology. Herein we present a micropatterning technique ("plasma lithography") that uses photolithography and plasma **thin-film** polymerization for the fabrication of cell culture substrates

with a cell-adhesive pattern on a cell-repellent (non-fouling) background. The micron-level pattern was designed to isolate individual vascular smooth muscle cells (SMC) on areas with a projected area of between 25 and 3600 mum2 in order to later study their response to cytokine stimulation in dependence of the cell size and shape as an indication for the phenotypic state of the cells. Polyethylene terephthalate substrates were first coated with a non-fouling plasma polymer of tetraglyme (tetraethylene glycol dimethyl ether). In an organic lift-off process, we then fashioned square- and rectangular-shaped islands of a **thin** fluorocarbon plasma polymer **film** of apprx12-nm thickness. Electron spectroscopy for chemical **analysis** and secondary ion **mass spectroscopy** were used to optimize the deposition conditions and characterize the resulting polymers. Secondary ion **mass spectroscopy** imaging was used to visualized the spatial distribution of the polymer components of the micropatterned surfaces. Rat vascular SMC were seeded onto the patterned substrates in serum-free medium to show that the substrates display the desired properties, and that cell shape can indeed be controlled. For long-term maintenance of these cells, the medium was augmented with 10% calf serum after 24 h in culture, and the medium was exchanged every 3 days. After 2 weeks, the cells were still confined to the areas of the adhesive pattern, and when one or more cells spanned more than one island, they did not attach to the intervening tetraethylene glycol dimethyl ether (tetraglyme) background. Spreading-restricted cells formed a well-ordered actin skeleton, which was most dense along the perimeter of the cells. The shape of the nucleus was also influenced by the pattern geometry. These properties make the patterned substrates suitable for investigating if the phenotypic reversion of SMC can be influenced by controlling the shape and size of SMC in vitro.

IT Major Concepts
    Methods and Techniques; Cardiovascular System (Transport and Circulation)
IT Parts, Structures, & Systems of Organisms
    plasma: blood and lymphatics; vascular smooth muscle cell: circulatory system, muscular system
IT Methods & Equipment
    electron spectroscopy: analytical method; ion **mass spectroscopy**: analytical method; plasma lithography: analytical method
IT Miscellaneous Descriptors
    pattern geometry; shape; size
ORGN Super Taxa
    Muridae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
    rat (Muridae)
ORGN Organism Superterms
    Animals; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Rodents; Vertebrates

L13 ANSWER 4 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:262151 BIOSIS
DN PREV200100262151
TI Photodegradation of azadirachtin-A: A neem-based pesticide.
AU Dureja, P. (1); Johnson, Sapna
CS (1) Division of Agricultural Chemicals, Indian Agricultural Research Institute, New Delhi, 110 012 India
SO Current Science (Bangalore), (25 December, 2000) Vol. 79, No. 12, pp. 1700-1703. print.
    ISSN: 0011-3891.
DT Article

LA English
SL English
AB Azadirachtin-A when exposed to UV light (254 nm), as a solid **thin film** on a glass surface, furnished only a single photoproduct. The photoproduct was isolated by repeated column chromatography and identified by NMR and **mass spectroscopy**. NMR data indicated that the (E)-2-methylbut-2-enoate ester group of azadirachtin-A has been converted into (Z)-2-methylbut-2-enoate ester. Half-life of azadirachtin-A as **thin film** under UV light was found to be 48 min.
IT Major Concepts
Biochemistry and Molecular Biophysics; Pesticides; Radiation Biology
IT Chemicals & Biochemicals
azadirachtin-A: UV exposure, molecular properties, neem-based pesticide, photodegradation mechanisms; photoproducts: **analysis**, isolation
IT Methods & Equipment
NMR spectroscopy: analytical method, spectroscopic techniques: CB
IT Miscellaneous Descriptors
UV effects: **analysis**
ORGN Super Taxa
Meliaceae: Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGN Organism Name
neem (Meliaceae)
ORGN Organism Superterms
Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
RN 11141-17-6 (AZADIRACHTIN-A)

L13 ANSWER 5 OF 30 BIOSIS
AN 2000:99151 BIOSIS
DN PREV200000099151
TI Competitive ligand exchange/adsorptive cathodic stripping voltammetry (CLE/AdCSV) for kinetic studies of nickel speciation in aqueous environmental **samples** containing heterogeneous, macromolecular, organic complexants.
AU Lam, Michael T.; Murimboh, J.; Hassan, Nouri M.; Chakrabarti, C. L. (1)
CS (1) Department of Chemistry, Ottawa-Carleton Chemistry Institute, Carleton University, 1125 Colonel By Drive, Ottawa, ON, K1S 5B6 Canada
SO Analytica Chimica Acta, (Dec. 3, 1999) Vol. 402, No. 1-2, pp. 195-209.
ISSN: 0003-2670.
DT Article
LA English
SL English
AB Competitive ligand exchange/adsorptive cathodic stripping voltammetry (CLE/AdCSV) using rotating disk electrode voltammetry/square wave voltammetry (RDEV/SWV) has been developed and applied to the kinetic speciation of nickel in aqueous environmental **samples** containing heterogeneous, macromolecular, organic complexants. Dissociation rate coefficients were obtained for nickel complexes in nitrilotriacetic acid (NTA) model solutions, model solutions of a well-characterized fulvic acid (Armadale fulvic acid) and Rideau river surface water (RRSW). The results demonstrated that the dissociation of nickel complexes formed by organic complexants was slow in comparison with the rate of formation of the Ni(DMG)2 complex. Two kinetically distinguishable components were observed in the NTA model solutions: the first with dissociation rate coefficient > 10-3 s-1, and the second with a dissociation rate coefficient apprxeq10-5 s-1. Nickel complexes of the Armadale FA in the model solution yielded two kinetically distinguishable nickel complexes, including an inert component that did not dissociate within the time scale of the experiment. The proportion of the inert component increased as the (FA) to (Ni) mole ratio was increased. The nickel complexes in the RRSW **sample** yielded

one kinetically distinguishable component: an extremely slowly-dissociating component with a first-order dissociation rate coefficient apprxeq10-6 s-1. The results are in agreement with the earlier results obtained by our laboratory on the lability/inertness of the Ni-FA complexes formed with the Armadale FA and studied by the competing ligand exchange method (CLEM) using Chelex 100 as the competing ligand and inductively-coupled plasma - **mass spectrometry** (ICP-MS) and graphite furnace atomic absorption spectrometry (GFAAS) for measurement of the kinetics of metal complex dissociation.

IT Major Concepts
Freshwater Ecology (Ecology, Environmental Sciences); Methods and Techniques; Pollution Assessment Control and Management

IT Chemicals & Biochemicals
Armdale BH horizon fulvic acid: model solution, soil; Chelex 100: competing ligand; dimethylglyoxime: Fisher Scientific, reagent; nickel: Rideau River surface water, **analysis**, aqueous environmental **samples**, complexes, dissociation rate constants, freshwater, heterogeneous complexants, macromolecular complexants, organic complexants, pollutant, river water, speciation, toxin; nitrilotriacetic acid: model solution

IT Methods & Equipment
Bioanalytical Systems 100B/W electrochemical analyzer: Bioanalytical Systems, laboratory equipment; competitive ligand exchange/adsorptive cathodic stripping voltammetry: **Analysis**/Characterization Techniques: CB, analytical method; graphite furnace atomic absorption spectrometry: analytical method, spectroscopic techniques: CB; inductively coupled plasma-**mass spectrometry**: analytical method, spectroscopic techniques: CB; mathematical model: **Analysis**/Characterization Techniques: CB, mathematical method; mercury **thin film** electrode: laboratory equipment; rotating disk electrode voltammetry: **Analysis** /Characterization Techniques: CB, analytical method

GT Rideau River (Ontario, Canada, North America, Nearctic region)

RN 11139-85-8 (CHELEX 100)
95-45-4 (DIMETHYLGLYOXIME)
7440-02-0 (NICKEL)
139-13-9 (NITRILOTRIACETIC ACID)

L13 ANSWER 6 OF 30 BIOSIS

AN 1999:423592 BIOSIS

DN PREV199900423592

TI Characterization of the outmost surface of ion-selective solvent polymeric PVC membranes and protein adsorption.

AU Ye, Qingshan; Keresztes, Zsofia; Horvai, George (1)

CS (1) Division of Chemical Information Technology, Technical University of Budapest, Gellert ter 4, H-1111, Budapest Hungary

SO Electroanalysis, (July, 1999) Vol. 11, No. 10-11, pp. 729-734.
ISSN: 1040-0397.

DT Article

LA English

SL English

AB Highly plasticized PVC is the most commonly used membrane matrix of ion-selective sensors. Chemical, physical, and morphological features of plasticized PVC surfaces have been investigated by AFM, TOF-SSIMS and contact angle measurement. The results show chemical, physical and topographical differences depending on the **sample** preparation procedure as well as the type and amount of plasticizer used. The surfaces of **thin films** and thick membranes are markedly different, despite the same nominal bulk composition. Bovine serum albumin (BSA) adsorption on a typical Ca2+-selective membrane surface is evident

from electrical impedance observations, while AFM finds no BSA clusters on the membrane surface.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques

IT Chemicals & Biochemicals
bovine serum albumin: **analysis**, membrane adsorption, molecular properties; calcium ions: **analysis**; polyvinyl chloride polymers: applications; proteins: **analysis**, membrane adsorption, molecular properties; solvents

IT Methods & Equipment
atomic force microscopy: analytical method, microscopy: CB; contact angle **analysis**: **Analysis**/Characterization Techniques: CB, analytical method; ion-selective sensors: applications, equipment; **mass spectrometry**: analytical method, spectroscopic techniques: CB; Nanoscope III: Digital Instruments, equipment

L13 ANSWER 7 OF 30 BIOSIS
AN 1998:505307 BIOSIS
DN PREV199800505307
TI Inorganic trace **analysis** by **mass spectrometry**
.
AU Becker, Johanna Sabine (1); Dietze, Hans-Joachim
CS (1) Zentralabteilung Chemische Analysen, Forchungszentrum Juelich GmbH, D-52425 Juelich Germany
SO Spectrochimica Acta Part B Atomic Spectroscopy, (Oct. 2, 1998) Vol. 53, No. 11, pp. 1475-1506.
ISSN: 0584-8547.
DT General Review
LA English
AB **Mass spectrometric** methods for the trace **analysis** of inorganic materials with their ability to provide a very sensitive multielemental **analysis** have been established for the determination of trace and ultratrace elements in high-purity materials (metals, semiconductors and insulators), in different technical **samples** (e.g. alloys, pure chemicals, ceramics, **thin films**, ion-implanted semiconductors), in environmental **samples** (waters, soils, biological and medical materials) and geological **samples**. Whereas such techniques as spark source **mass spectrometry** (SSMS), laser ionization **mass spectrometry** (LIMS), laser ablation inductively coupled plasma **mass spectrometry** (LA-ICP-MS), glow discharge **mass spectrometry** (GDMS), secondary ion **mass spectrometry** (SIMS) and inductively coupled plasma **mass spectrometry** (ICP-MS) have multielemental capability, other methods such as thermal ionization **mass spectrometry** (TIMS), accelerator **mass spectrometry** (AMS) and resonance ionization **mass spectrometry** (RIMS) have been used for sensitive mono- or oligoelemental ultratrace **analysis** (and precise determination of isotopic ratios) in solid **samples**. The limits of detection for chemical elements using these **mass spectrometric** techniques are in the low ng g-1 concentration range. The quantification of the analytical results of **mass spectrometric** methods is sometimes difficult due to a lack of matrix-fitted multielement standard reference materials (SRMs) for many solid **samples**. Therefore, owing to the simple quantification procedure of the aqueous solution, inductively coupled plasma **mass spectrometry** (ICP-MS) is being increasingly used for the characterization of solid **samples**

after **sample** dissolution. ICP-MS is often combined with special **sample** introduction equipment (e.g. flow injection, hydride generation, high performance liquid chromatography (HPLC) or electrothermal vaporization) or an off-line matrix separation and enrichment of trace impurities (especially for characterization of high-purity materials and environmental **samples**) is used in order to improve the detection limits of trace elements. Furthermore, the determination of chemical elements in the trace and ultratrace concentration range is often difficult and can be disturbed through mass interferences of **analyte** ions by molecular ions at the same nominal mass. By applying double-focusing sector field **mass spectrometry** at the required mass resolution - by the **mass spectrometric** separation of molecular ions from the **analyte** ions - it is often possible to overcome these interference problems. Commercial instrumental equipment, the capability (detection limits, accuracy, precision) and the analytical application fields of **mass spectrometric** methods for the determination of trace and ultratrace elements and for surface **analysis** are discussed.

IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals
inorganic materials

IT Methods & Equipment
accelerator **mass spectrometry**: analytical method, spectroscopic techniques: CB; glow discharge **mass spectrometry**: analytical method, spectroscopic techniques: CB; inductively coupled plasma **mass spectrometry**: analytical method, **mass spectrometry**: CB; inorganic trace **analysis**: **Analysis**/Characterization Techniques: CB, analytical method; laser ablation inductively coupled plasma **mass spectrometry**: analytical method, spectroscopic techniques: CB; laser ionization **mass spectrometry**: analytical method, spectroscopic techniques: CB; **mass spectrometer**: laboratory equipment; **mass spectrometry**: analytical method, spectroscopic techniques: CB; multielemental **analysis**: **Analysis**/Characterization Techniques: CB, analytical method; resonance ionization **mass spectrometry**: analytical method, spectroscopic techniques: CB; secondary ion **mass spectrometry**: analytical method, **mass spectrometry**: CB; spark source **mass spectrometry**: analytical method, spectroscopic techniques: CB; thermal ionization **mass spectrometry**: analytical method, spectroscopic techniques: CB; HPLC [high performance liquid chromatography]: liquid chromatography, purification method

L13 ANSWER 8 OF 30 BIOSIS

AN 1998:473362 BIOSIS

DN PREV199800473362

TI Preliminary evaluation of an SF5+ polyatomic primary ion beam for **analysis** of organic **thin films** by secondary ion **mass spectrometry**.

AU Gillen, Greg (1); Roberson, Sonya

CS (1) Surface Microanalysis Science Division, Chemical Science Technology, Laboratory National Institute Standards Technology, Gaithersburg, MD 20899 USA

SO Rapid Communications in Mass Spectrometry, (1998) Vol. 12, No. 19, pp. 1303-1312.
ISSN: 0951-4198.

DT Article

LA English
AB Organic vapor deposited **thin films** of pure biomolecules, polymer films and biomolecules dispersed in gelatin and biological tissue have been analyzed in a magnetic sector secondary ion **mass spectrometer** using an SF5+ primary ion beam at keV impact energies. In comparison to Ar+ bombardment under identical conditions, bombardment with SF%+ gives a 10 to 50 fold enhancement in the secondary ion yields for characteristic molecular ions. The SF5+ primary ion beam can be focussed to a small spot allowing molecular ion images to be obtained at micrometer spatial resolution with enhanced sensitivity. More importantly, the decay in molecular ion signal as a function of primary ion dose commonly observed in SIMS using monoatomic primary ions is either eliminated or greatly reduced, allowing molecular depth profiles to be obtained of organic **thin films**. By continuing to **sample** intact molecules as sputtering proceeds into the **sample**, the total number of detected characteristic secondary ions is increased by as much as a factor of dollar sign 700 for SF5+ bombardment as compared to Ar+ bombardment under identical analytical conditions. This effect is thought to be a result of the high erosion rate and the low penetration depth inherent in the use of a polyatomic primary projectile. This paper was produced under the auspices of the US Government and it is therefore not subject to copyright in the US.
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
organic **thin films**: **analysis**
IT Methods & Equipment
secondary ion **mass spectrometry**: analytical method, **mass spectrometry**: CB; sulfonium fluoride polyatomic primary ion beam: equipment; Cameca IMS 4F magnetic sector SIMS instrument: equipment

L13 ANSWER 9 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1998:447086 BIOSIS
DN PREV199800447086
TI Volatile flavour and key off-flavour compounds of over-stored wheat germ.
AU El-Saharty, Y. S. (1); El-Zeany, B. A.; Berger, R. G.
CS (1) Zentrum Angewandte Chemie, Inst. Lebensmittelchemie, Univ. Hannover, Wunstorferstr. 14, D-30453 Hannover Germany
SO Advances in Food Sciences, (Sept., 1998) Vol. 20, No. 5-6, pp. 198-202. ISSN: 1431-7737.
DT Article
LA English
AB The volatiles of over-stored wheat germ were analysed in **samples** that were oxidised during storage in the dark at 50%C for different periods of time to develop a strategy for preventing the formation of undesirable off-flavours. The progress of autoxidation was followed by static headspace **analysis** of n-hexanal and organoleptically. The flavour compounds were recovered and separated by **thin-film** vacuum distillation of the oil, obtained by soxhlet extraction of over-stored wheat germ **samples**, and fractionated by silica gel column chromatography. The aroma concentrates were analysed by gas chromatography (GC), coupled GC-**mass spectrometry** and GC-olfactometry. About 150 chemicals were identified. The occurrence of flavour compounds in both fresh and over-stored wheat germ was compared. Major off-flavour compounds of the over-stored **sample** were n-hexanal, 2-n-pentyl furan, (E,E)-3,5-octadien-2-one, (E,E)-2,4-decadienal and 6,10-dimethyl-(E)-5,9-undecadien-2-one.
IT Major Concepts
Foods

IT Chemicals & Biochemicals
lipids: oxidation; n-hexanal; off-flavor compounds; volatile flavor compounds
IT Methods & Equipment
gas chromatography: analytical method, chromatographic techniques; **mass spectrometry**: analytical method; static headspace **analysis**
IT Miscellaneous Descriptors
autoxidation; food chemistry; food storage; temperature effects; wheat germ: grain product, over-stored
RN 66-25-1 (N-HEXANAL)

L13 ANSWER 10 OF 30 BIOSIS
AN 1998:341400 BIOSIS
DN PREV199800341400
TI Performance characteristics for the measurement of Cs and Sr by diffusive gradients in the films (DGT.
AU Chang, Ling-Yun; Davison, William (1); Zhang, Hao; Kelly, Mike
CS (1) Inst. Environmental Biological Science, Environmental Science Div., Lancaster Univ., Lancaster LA1 4YQ UK
SO Analytica Chimica Acta, (July 31, 1998) Vol. 368, No. 3, pp. 243-253. ISSN: 0003-2670.
DT Article
LA English
AB The new technique of diffusive gradients in **thin films** (DGT) has been used for the first time with a general cation exchange resin (AG50W-X8) as the binding agent. Its use for the measurement of Cs and Sr has been systematically investigated. Individual experiments showed that resin embedded in polyacrylamide gel efficiently removed Cs and Sr from solution. Cs and Sr could be reproducibly eluted with nitric acid if sufficient volume was used. The dependence of the DGT response to exposure time, gel layer thickness and temperature could be theoretically predicted for a wide range of pH (4-9) and ionic strength (1 mumol 1-1 mmol 1-1). The major difference compared to the use of a highly selective resin, such as Chelex, for trace metals, is that the resin becomes saturated due to the continuous uptake of the major cations present in solution. Because of this capacity limitation, the theoretical response in soft water was only obtained for exposure times up to 20 h. The use of DGT with general purpose resins to measure ions in natural waters is likely to be restricted to soft water. In situ measurement of labile species of Cs (0.24 nmol 1-1) and Sr (0.19 mumol 1-1) in soft water showed no evidence for the presence of stable complexes or colloidal forms.
IT Major Concepts
Chemistry; Methods and Techniques
IT Chemicals & Biochemicals
cesium: **analysis**, measurement; strontium: **analysis**, measurement; AG50W-X8 cation exchange resin: Bio-Rad Laboratories, binding agent
IT Methods & Equipment
diffusive gradients in **thin films** technique: **analysis**/characterization techniques: CB, analytical method; polyacrylamide gel: laboratory equipment; ICP-MS [inductively coupled plasma-**mass spectrometry**]: analytical method, mas spectrum **analysis**: CB
IT Miscellaneous Descriptors
natural waters; soft water
RN 7440-46-2 (CESIUM)
7440-24-6 (STRONTIUM)
9003-05-8 (POLYACRYLAMIDE)

L13 ANSWER 11 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1998:164780 BIOSIS
DN PREV199800164780
TI **Analysis** of odour active compounds of roasted wheat germ.
AU El-Saharty, Y. S. (1); El-Zeany, B. A.; Tawakkol, M. S.; Berger, R. G.
CS (1) Faculty Pharmacy, Cairo Univ., Kasrel-Aini St., ET-11562 Cairo Egypt
SO Advances in Food Sciences, (Jan., 1998) Vol. 20, No. 1-2, pp. 53-58.
ISSN: 1431-7737.
DT Article
LA English
AB Aroma generation by roasting wheat germ (160 degreeC, 20 min) was investigated. **Thin film** vacuum distillation of the oil, obtained by Soxhlet extraction of roasted wheat germ, resulted in a volatile concentrate that was fractionated by silica gel column chromatography and analysed by gas chromatography (GC), coupled GC-**mass spectrometry** (GC-MS) and GC-olfactometry (GC-O). Application of aroma extract dilution **analysis** to the original concentrate revealed that 63 out of the 175 volatiles identified showed dilution factors gtoreq8; and 9 out of these showed a dilution factor in the range of 1024 to 2048: 2-methyl pyrazine (roasted, nutty), 2,6-diethyl pyrazine (roasted, bread), 3-ethyl-2,5-dimethyl pyrazine (roasted, bran), 2-methyl-5-propyl pyrazine (roasted, bread), 3,5-diethyl-2-methyl pyrazine (roasted, coffee), 2-acetyl-6-methyl pyrazine (roasted, cocoa), 2,3-dimethyl-5-isopentyl pyrazine (roasted, bread), an unknown pyrazine derivative (roasted, nutty), and an unknown acetyl furfural derivative (baked bread).
IT Major Concepts
Foods
IT Chemicals & Biochemicals
acetyl furfural derivative: volatile odor compound; pyrazine derivative: volatile odor compound; 2-acetyl-6-methyl pyrazine: volatile odor compound; 2-methyl pyrazine: volatile odor compound; 2-methyl-5-propyl pyrazine: volatile odor compound; 2,3-dimethyl-5-isopentyl pyrazine: volatile odor compound; 2,6-diethyl pyrazine: volatile odor compound; 3-ethyl-2,5-dimethyl pyrazine: volatile odor compound; 3,5-diethyl-2-methyl pyrazine: volatile odor compound
IT Miscellaneous Descriptors
roasted wheat germ: grain product
RN 13360-65-1 (3-ETHYL-2,5-DIMETHYL PYRAZINE)
290-37-9D (PYRAZINE)
98-01-1D (FURFURAL)

L13 ANSWER 12 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1998:30844 BIOSIS
DN PREV199800030844
TI The optimization of the precision of the strontium/calcium ratio measurement in coral **samples** by radioisotope induced X-ray fluorescence.
AU Labrecque, John J. (1); Rosales, P. A.
CS (1) BAMCO CCS-199-00, P.O. Box 25322, Miami, FL USA
SO Spectrochimica Acta Part B Atomic Spectroscopy, (Sept. 1, 1997) Vol. 52, No. 11, pp. 1645-1651.
ISSN: 0584-8547.
DT Article
LA English
AB The estimation of sea surface water temperatures from the determination of the (Sr/Ca)atomic ratio in coral skeletons has been shown to be a promising method for investigating climate models. The determination of the Sr/Ca ratio by atomic absorption spectrometry was shown not to be

acceptable because of the poor precision (around 3%), while more recently **mass spectrometric** methods were reported with less than 0.5% precision and accuracy. In this work. we have explored the optimization of the precision of the Sr/Ca ratio by radioisotope induced X-ray fluorescence, employing thin **sample** methods with 241Am and 109Cd excitation sources. It was found that the precision for one determination could approach 0.58 and, for the determination of the Sr/Ca ratio for various aliquots, about 1.0% was found when the **thin film** (around 1 mg cm-2) method was employed with excitation by a 109Cd source. Finally, sea surface water temperatures were estimated using three recent Acropora coral specimens from the Los Roques archipelago; the results were similar to other values reponed for tropical sea surface waters.

IT Major Concepts
   Chemistry; Methods and Techniques
IT Methods & Equipment
   radioisotope induced X-ray fluorescence: analytical method
IT Miscellaneous Descriptors
   coral skeletons; sea surface water temperature: estimation; strontium/calcium ratio measurement: precision optimization
RN 7440-24-6 (STRONTIUM)
   7440-70-2 (CALCIUM)

L13 ANSWER 13 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:413918 BIOSIS
DN PREV199799705961
TI Odour active compounds of fresh wheat germ.
AU El-Saharty, Y. S. (1); Tawakkol, M. S.; El-Zeany, B. A.; Berger, R. G.
CS (1) Univ. Hannover, Wunstorferstr. 14, D-30453 Hannover Germany
SO Advances in Food Sciences, (1997) Vol. 19, No. 3-4, pp. 90-94.
   ISSN: 1431-7737.
DT Article
LA English
AB The volatile, neutral constituents of wheat germ, as obtained by soxhlet extraction, were isolated from the lipid matrix by high vacuum **thin-film** distillation and fractionated by silica gel column chromatography. The aroma concentrates obtained were analysed by gas chromatography (GC), coupled GC-**mass spectrometry** and GC-olfactometry. About 150 chemicals were identified. Application of aroma extract dilution **analysis** to the original concentrate revealed 37 key odourants with dilution factors gtoreq 4. Seven out of the 37 important aroma compounds of wheat germ showed a dilution factor in the range of 128 to 512: n-hexanal (grassy-flowery), n-octanal (fatty), n-nonanal (floral, fatty), (E)-2-octenal (green, herbaceous), (E,E)-2,4-nonadienal (oily), (E,E)-2,4-decadienal (fatty) and 4-octanolide (coconut, creamy).
IT Major Concepts
   Biochemistry and Molecular Biophysics; Foods; Methods and Techniques; Sense Organs (Sensory Reception)
IT Chemicals & Biochemicals
   N-HEXANAL; N-OCTANAL; N-NONANAL; 4-OCTANOLIDE
IT Miscellaneous Descriptors
   (E)-2-OCTENAL; (E,E)-2,4-DECADIENAL; (E,E)-2,4-NONADIENAL; ANALYTICAL METHOD; AROMA COMPOUND; BIOBUSINESS; FOOD INGREDIENT; FOODS; FRESH WHEAT GERM; GAS CHROMATOGRAPHY-**MASS SPECTROMETRY**; GAS CHROMATOGRAPHY-OLFACTOMETRY; N-HEXANAL; N-NONANAL; N-OCTANAL; 4-OCTANOLIDE
RN 66-25-1 (N-HEXANAL)
   124-13-0 (N-OCTANAL)
   124-19-6 (N-NONANAL)

104-50-7 (4-OCTANOLIDE)

L13 ANSWER 14 OF 30 BIOSIS
AN 1994:490418 BIOSIS
DN PREV199497503418
TI Products, intermediates, mass balances and reaction pathways for the oxidation of trichloroethylene in air via heterogeneous photocatalysis.
AU Jacoby, William A. (1); Nimlos, Mark R.; Blake, Daniel M.; Noble, Richard D.; Koval, Carl A.
CS (1) Natl. Renewable Energy Lab., 1617 Cole Blvd., Golden, CO 80401 USA
SO Environmental Science & Technology, (1994) Vol. 28, No. 9, pp. 1661-1668. ISSN: 0013-936X.
DT Article
LA English
AB Studies of the photocatalytic reaction of a solution of trichloroethylene in the air and in contact with UV-irradiated titanium dioxide have produced conflicting reports in regard to the composition of the product mixture. This paper resolves these discrepancies by reporting the results of experiments designed to identify and quantify intermediates, products, and reaction pathways. Mass balances are closed in differential and integral modes to ascertain the effects of factors such as the extent of conversion, feed composition, and photon energy on the composition of the product stream. Dichloroacetyl chloride, phosgene, carbon dioxide, carbon monoxide, and hydrogen chloride were observed in the effluent of photocatalytic reactors featuring **thin films** of titanium dioxide catalyst. These observations were made with a gas-phase Fourier transform infrared spectrometer. The instrument directly **samples** the effluent from the reactor without splitting or dilution. A direct sampling molecular beam **mass spectrometer** used in a parallel study has also identified molecular chlorine as a component of the effluent.
IT Major Concepts
Biochemistry and Molecular Biophysics; Climatology (Environmental Sciences); Pollution Assessment Control and Management; Toxicology
IT Chemicals & Biochemicals
TRICHLOROETHYLENE; TITANIUM DIOXIDE; DICHLOROACETYL CHLORIDE; PHOSGENE; CARBON DIOXIDE; CARBON MONOXIDE; HYDROGEN CHLORIDE
IT Miscellaneous Descriptors
AIR POLLUTION; CARBON DIOXIDE; CARBON MONOXIDE; DICHLOROACETYL CHLORIDE; HYDROGEN CHLORIDE; PHOSGENE; REACTION PRODUCTS; REMEDIATION; TITANIUM DIOXIDE; UV-IRRADIATION
RN 79-01-6 (TRICHLOROETHYLENE)
13463-67-7 (TITANIUM DIOXIDE)
79-36-7 (DICHLOROACETYL CHLORIDE)
75-44-5 (PHOSGENE)
124-38-9 (CARBON DIOXIDE)
630-08-0 (CARBON MONOXIDE)
7647-01-0 (HYDROGEN CHLORIDE)

L13 ANSWER 15 OF 30 BIOSIS
AN 1994:71798 BIOSIS
DN PREV199497084798
TI **Thin** gold **film**-assisted laser desorption/ionization fourier transform ion cyclotron resonance **mass spectrometry** of biomolecules.
AU Wahl, Markus C.; Kim, Hyun Sik; Wood, Troy D.; Guan, Shenheng; Marshall, Alan G. (1)
CS (1) Dep. Chem., Natl. High Magn. Field Lab., Fla. State Univ., 1800 E. Paul Dirac Dr., Tallahassee, FL 32306-4005 USA
SO Analytical Chemistry, (1993) Vol. 65, No. 24, pp. 3669-3676.

ISSN: 0003-2700.
DT Article
LA English
IT Major Concepts
Methods and Techniques
IT Chemicals & Biochemicals
GOLD
IT Miscellaneous Descriptors
COLLISION COOLING; METHOD; QUADRUPOLAR EXCITATION; SENSITIVITY; THERMALLY LABEL ORGANIC **SAMPLE**
RN 7440-57-5 (GOLD)

L13 ANSWER 16 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1993:515330 BIOSIS
DN PREV199345113955
TI **Analysis** of biomedical polymer surfaces: Polyurethanes and plasma-deposited **thin films**.
AU Ratner, Buddy D. (1); Tyler, Bonnie J.; Chilkoti, Ashutosh
CS (1) Dep. Chem. Eng., Univ. Washington, Seattle, WA 98195 USA
SO Clinical Materials, (1993) Vol. 13, No. 1-4, pp. 71-84.
Meeting Info.: Biomedical Polymers Conference Jerusalem, Israel June 10-12, 1991
ISSN: 0267-6605.
DT Article
LA English
IT Major Concepts
Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Methods and Techniques; Pathology; Physiology
IT Miscellaneous Descriptors
BIOCOMPATIBILITY; BIOREACTIVITY; CONTACT-ANGLE METHODS; ELECTRON SPECTROSCOPY FOR CHEMICAL **ANALYSIS**; SCANNING PROBE MICROSCOPY; SECONDARY ION **MASS SPECTROMETRY**; SURFACE CHARACTERIZATION METHODS; VIBRATIONAL SPECTROSCOPY
ORGN Super Taxa
Vertebrata - Unspecified: Vertebrata, Chordata, Animalia
ORGN Organism Name
Vertebrata (Vertebrata - Unspecified)
ORGN Organism Superterms
animals; chordates; nonhuman vertebrates; vertebrates

L13 ANSWER 17 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1993:339271 BIOSIS
DN PREV199396036271
TI Planar chromatography coupled to **mass spectrometry**.
AU Busch, Kenneth L.; Mullis, James O.; Carlson, Richard E.
CS Sch. Chemistry and Biochemistry, Georgia Inst. Technol., Atlanta, Georgia 30332-0400
SO Journal of Liquid Chromatography, (1993) Vol. 16, No. 8, pp. 1695-1713.
ISSN: 0148-3919.
DT Article
LA English
AB Applications of thin-layer chromatography/**mass spectrometry** are expanding rapidly due to commercial availability of the devices, and improved understanding of the procedures required to measure good quality **mass spectrometric** data. Several of the common approaches to TLC/MS coupling are pursued in our laboratory; recent focus has been on the techniques of **sample** preparation and plate treatment that allow direct TLC/MS **analysis** to be completed on almost any instrument. Specific examples to be covered are

the direct derivatization into an electron/chemical ionization source, development and concentration of **thin-film** fluorescent dyes for **analysis** by liquid secondary ion **mass spectrometry** (LSIMS), and the use of a CCD-based imaging system to explore the integration of optical and **mass spectrometric** information for the characterization of **samples** separated by thin layer chromatography.

IT Major Concepts
Biochemistry and Molecular Biophysics; Equipment, Apparatus, Devices and Instruments; Methods and Techniques
IT Chemicals & Biochemicals
EMPORE
IT Miscellaneous Descriptors
ANALYTICAL METHOD; COMPUTER ALGORITHM; MATHEMATICAL METHOD
RN 133108-44-8 (EMPORE)

L13 ANSWER 18 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1993:98830 BIOSIS
DN PREV199395054026
TI Aspects of the capillary GC **analysis** of all-trans- and 13-cis-acitretin.
AU Meyer, Everlyne; De Leenheer, Andre P. (1); Sandra, Pat
CS (1) Lab. Med. Biochem., Univ. Gent, Harelbekestraat 72, B-9000 Gent Belgium
SO HRC (Journal of High Resolution Chromatography), (1992) Vol. 15, No. 10, pp. 637-640.
ISSN: 0935-6304.
DT Article
LA English
AB The capillary gas chromatographic (CGC) **analysis** of the dermatological drug trans-acitretin (Neotigason-R) and its cis metabolite is described. Separation of the methyl ester derivatives can be achieved on a 90% biscyanopropylsiloxane phase. The importance of using cold on-column injection and short, **thin film** capillary columns is discussed. For patients treated with the prodrug of acitretin, etretinate (Tigason-R), i.e. the ethyl ester of Neotigason, three compounds have to be separated. Selectivity tuning is required for successful CGC separation. An alternative can be found in the selectivity of ion monitoring **mass spectroscopy**. **Analysis** of plasma **samples** involves liquid-liquid extraction, a derivatization step, and HPLC purification.
IT Major Concepts
Methods and Techniques; Pharmacology
IT Chemicals & Biochemicals
13-CIS-ACITRETIN; NEOTIGASON; RO-10-1670
IT Miscellaneous Descriptors
ANALYTICAL METHOD; ANTIPSORIATIC AGENT; DERMATOLOGICAL AGENT; GAS CHROMATOGRAPHY; NEOTIGASON; PHARMACEUTICAL DETERMINATION; RO-10-1670
RN 69427-46-9 (13-CIS-ACITRETIN)
55079-83-9 (NEOTIGASON)
55079-83-9 (RO-10-1670)

L13 ANSWER 19 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1992:507213 BIOSIS
DN BA94:125738
TI SUPERCRITICAL FLUID EXTRACTION AND CLEANUP WITH CAPILLARY GC-ION TRAP **MASS SPECTROMETRY** FOR DETERMINATION OF POLYCHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS IN ENVIRONMENTAL **SAMPLES**.
AU ALEXANDROU N; MIAO Z; COLQUHOUN M; PAWLISZYN J; JENNISON C
CS GUELPH WATERLOO CENTRE GRADUATE WORK CHEMISTRY, UNIV. WATERLOO, WATERLOO,

ONTARIO N2L 3G1, CAN.
SO J CHROMATOGR SCI, (1992) 30 (9), 351-357.
CODEN: JCHSBZ. ISSN: 0021-9665.
FS BA; OLD
LA English
AB The optimization of an analytical process involving solvent-free isolation and full scan **mass spectrometric** quantitation for the determination of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) is presented and discussed. Supercritical fluid leaching and cleanup with Florisil is used to quantitatively remove the target **analytes** from environmental matrices and to eliminate interferences from the extraction mixture. This method is applied to **analysis** of solid **samples** such as fly ash and paper pulp and to aqueous matrices such as paper mill effluents, using an indirect supercritical fluid extraction approach. Gas chromatographic separation is performed on narrow-bore capillary columns. Separation and quantitation of the extract mixture is performed on capillary gas chroamtography-mass spectometry (GC-MS). A **thin-film** stationary phase (0.1 .mu.m) has been found to yield superior resolution and **analysis** time as compared with a 0.25-.mu.m film thickness column. Low cost quadrupole ion trap **mass spectrometry** is used to facilitate proper quantitation of eluting **analytes**. The full mass spectrum of pg levels of **analyte** obtained with this technique eliminates possible classification errors that might arise when only a few confirming ions are used, as with a conventional quadrupole **mass spectrometer**. In the proposed analytical procedures non-PCDD-PCDF isotopic internal standards, such as d12-benzo(a)pyrene and non-13C-2,3,7,8 recovery surrogates such as 13C-1,2,3,4-T4CDD are used, so that the highly toxic 2,3,7,8-substituted PCDD may be confirmed by their full scan spectra.
IT Miscellaneous Descriptors
ENVIRONMENTAL POLLUTANTS GAS CHROMATOGRAPHY ANALYTICAL METHOD
RN 132-64-9D (DIBENZOFURANS)
262-12-4D (DIBENZO-P-DIOXINS)

L13 ANSWER 20 OF 30 BIOSIS
AN 1989:477577 BIOSIS
DN BA88:113337
TI COLLECTION AND DETERMINATION OF SOLANESOL AS A TRACER OF ENVIRONMENTAL TOBACCO SMOKE IN INDOOR AIR.
AU OGDEN M W; MAIOLO K C
CS R.J. REYNOLDS TOBACCO CO., RES. AND DEVELOPMENT, WINSTON-SALEM, N.C. 27102.
SO ENVIRON SCI TECHNOL, (1989) 23 (9), 1148-1154.
CODEN: ESTHAG. ISSN: 0013-936X.
FS BA; OLD
LA English
AB Methodology for the gas chromatographic determination of solanesol in the particulate fraction of environmental tobacco smoke (ETS) aerosol is presented. Sampling is performed by drawing air through Fluoropore membrane filters with personal sampling pumps. **Samples** are prepared by extracting filters, evaporating the extract to dryness, and derivatizing the residue with N,O-bis(trimethylsilyl)trifluoroacetamide (BSTFA) followed by **analysis** on short, **thin-film** capillary columns with either flame ionization or **mass spectrometric** detection. Limit of detection is estimated at 0.2 .mu.g/m3 for 2-h **sample** duration at 2 L/min. Results obtained from sampling in an environmental chamber indicate that solanesol is 2-3% by weight of respirable suspended particles (RSP) attributable to ETS from commercial cigarettes. Consequently, the

solanesol/RSP weight ratio can be used to apportion total RSP into ETS and non-ETS contributions. This approach was used to correctly predict the ETS contribution to a mixture of RSP from cigarette, candle, and oil lamp sources with an error of 10%.

IT Miscellaneous Descriptors
SAMPLING GAS CHROMATOGRAPHY RESPIRABLE SUSPENDED PARTICLES AIR POLLUTION COMMERCIAL CIGARETTES TOBACCO INDUSTRY

RN 13190-97-1 (SOLANESOL)

L13 ANSWER 21 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1988:435590 BIOSIS
DN BA86:87688
TI NEGATIVE THERMAL IONIZATION **MASS SPECTROMETRY** OF SELENIUM PART 1. ISOTOPE RATIO MEASUREMENTS AND DETERMINATIONS IN AQUATIC SYSTEMS WITH THE ISOTOPE DILUTION TECHNIQUE.
AU GROSSER R; HEUMANN K G
CS INST. ANORGANISCHE CHEMIE DER UNIV. REGENSBURG, UNIVERSITAETSSTRASSE 31, D-8400 REGENSBURG, BUNDESREPUBLIK DEUTSCHLAND.
SO FRESENIUS Z ANAL CHEM, (1988) 331 (3-4), 268-272.
CODEN: ZACFAU. ISSN: 0016-1152.
FS BA; OLD
LA German
AB Negative thermal ionization is used to determine the selenium isotope ratios in a double-filament ion source. A **thin film** of barium hydroxide on the rhenium ionization filament is applied to increase the Se- thermal ion current. The produced Se- ion beam is by a factor of about four higher when selenious acid instead of barium selenite or sodium selenate is used. A strong dependence of the ion current on the temperature of the ionization filament is found showing the maximum ion intensity at temperatures of 970.degree.-1000.degree. C. The different selenium isotope ratios of **samples** with natural isotopic abundance can be determined with relative standard deviations of 0.3-0.6%. This reproducibility is a good basis to improve the accuracy of the selenium atomic weight in the future by a calibrated measurement. An enriched 82Se spike is used to analyze selenium traces in aquatic systems with isotope dilution **mass spectrometry** down to the pg/g level. In the concentration range of 4-23 ng/g the selenium content is determined with relative standard deviations of 0.1-5%. The results agree well with those obtained with a hydride generation atomic absorption system. It is shown that the described method of isotope dilution **mass spectrometry** analyses the sum of the inorganic species selenate, selenite and selenide, but not volatile organic selenium compounds.
RN 7782-49-2 (SELENIUM)

L13 ANSWER 22 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1986:257804 BIOSIS
DN BA82:12553
TI THE ESTABLISHMENT OF THE ASSAY-SYSTEM OF BLOOD ADRENAL STEROIDS IN THE METHOD OF GAS CHROMATOGRAPHY-**MASS SPECTROMETRY**.
AU NOZAKI Y; KATOH K; SHINOZUKA T; FUJIMOTO M; OHYAMA K; ICHIMURA K
CS DEPARTMENT OF PEDIATRICS, YAMANASHI MEDICAL COLLEGE.
SO FOLIA ENDOCRINOL JPN, (1985 (RECD 1986)) 61 (10), 1167-1175.
CODEN: NNGZAZ. ISSN: 0029-0661.
FS BA; OLD
LA Japanese
AB In this study, we established a method for the quantitative measurement of native adrenal steroids with GC-MS equipped with capillary column (cross-linked methyl silicone 25 m .times. 0.2 mm I.D., 0.11 m **thin film**). 1 ml of serum **sample** containing

5.alpha.-cholestane as internal standard (IS) was elicited by organic solvent using extrelunt column. These **samples** were derived by n-butylboronic acid, o-methylhydroxylamine and trimethyl-silylating agents, then were finally applied to GC-MS. The intensities of molecular ions were used for the measurement of the serum concentration of steroids. The molecular ion peaks of steroids were obtained at m/z460 (17.alpha.-hydroxyprogesterone; 17OHP), m/z548 (corticosterone; B), m/z470 (11-deoxycortisol; S) m/z417 (Pregnenolone; PL), m/z372 (progesterone; PT), m/z558 (cortisol; F), m/z389 (dehydroepiandrosterone; DHEA), m/z371 (estrone; E1), m/z416 (estradiol, E2), m/z504 (estriol; E3), m/z389 (testosterone; T), m/z344 (androstenedione; A) and m/z372 (IS). The curve of calibration for each steroid showed good linearity. The sensitivities of the GC/MS method were less than 5 pg/one shot of each **sample**. The coefficients of variations of accuracies and precisions in this GC/MS method were less than 15% of each steroid. The **samples** from normal subjects after metyrapone and ACTH loading tests, and the patients of congenital adrenal hyperplasia showed a good correlationship between the data of GC/MS and the data of RIA after sephadex LH-20 column-chromatography. These results implied the usefulness of our system in clinical application. Moreover, this assay takes only 3 hrs. Thus it saves much time in comparison with the time-consuming radioimmunoassay system.

IT Miscellaneous Descriptors
HUMAN 17-ALPHA HYDROXYPROGESTERONE CORTICOSTERONE 11 DEOXYCORTISOL PREGNENOLONE PROGESTERONE CORTISOL DEHYDROEPIANDROSTERONE 5-ALPHA CHOLESTANE ESTRONE ESTRADIOL ESTRIOL TESTOSTERONE ANDROSTENEDIONE ACTH

RN 50-22-6 (CORTICOSTERONE)
50-23-7 (CORTISOL)
50-27-1 (ESTRIOL)
50-28-2 (ESTRADIOL)
53-16-7 (ESTRONE)
53-43-0 (DEHYDROEPIANDROSTERONE)
57-83-0 (PROGESTERONE)
58-22-0 (TESTOSTERONE)
63-05-8 (ANDROSTENEDIONE)
145-13-1 (PREGNENOLONE)
152-58-9 (11 DEOXYCORTISOL)
9002-60-2 (ACTH)

L13 ANSWER 23 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1985:424813 BIOSIS
DN BA80:94805
TI QUANTITATIVE **ANALYSIS** OF THE AUTOXIDATION PRODUCTS OF CHOLESTEROL IN FOODS OF ANIMAL ORIGIN.
AU FISCHER K-H; LASKAWY G; GROSCH W
CS DEUTSCHE FORSCHUNGSANSTALT LEBENSMITTELCHEMIE, LICHTENBERGSTRASSE 4, D-8046 GARCHING, BUNDESREPUBLIK DEUTSCHLAND.
SO Z LEBENSM-UNTERS -FORSCH, (1985) 181 (1), 14-19.
CODEN: ZLUFAR. ISSN: 0044-3026.
FS BA; OLD
LA German
AB After extraction with methylene chloride, isolation of the unsaponifiable lipid fraction and enrichment by 2 step column chromatography, the oxycholesterols was gas chromatographically separated in the form of their trimethylsilyl ethers on a **thin film** capillary and identified by **mass spectrometry**. The 3 major products of cholesterol autoxidation were cholest-5-ene-3.beta.,7.alpha.-diol(I) its 7.beta.-epimer(II) and 5,6-epoxy-cholestane-3.beta.-ol(III). Traces of cholestan-3.beta.,5.alpha.,6.beta.-triol and cholest-5en-3.beta.,25-diol were detected in some **samples**. Quantitative **analysis**

was performed with cholest-5-ene-3.beta.,19-diol as the internal standard. The highest concentrations of I-III were found in spray dried egg powders (total amount 15-60 .mu.g/g). Parmesan cheese, butter oil and sausages contained significantly lower levels of I-III (total amount 0.1-2.6 .mu.g/g). The concentrations of I-III increased strongly when butter oil and beef tallow were heated at 170.degree. C in the presence of air for a longer period.

IT Miscellaneous Descriptors
OXYCHOLESTEROL CHOLEST-5-EN-3-BETA 7-ALPHA-DIOL 5 6 EPOXYCHOLESTAN-3-BETA-OL CHOLESTANE-3-BETA 5-ALPHA 6-BETA-TRIOL CHOLEST-5-ENE-3-BETA 25-DIOL HEAT AIR BUTTER CHEESE SAUSAGE

RN 57-88-5 (CHOLESTEROL)
1253-84-5 (CHOLESTANE-3-BETA 5-ALPHA 6-BETA-TRIOL)
1335-21-3 (OXYCHOLESTEROL)

L13 ANSWER 24 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1984:314400 BIOSIS
DN BA78:50880
TI DETECTION OF LIPID PER OXIDATION IN LOW MOISTURE FOODS BY **ANALYSIS** OF THE MONO HYDROXY FATTY-ACIDS.
AU SONDERMANN C; GROSCH W
CS DEUTSCHE FORSHUNGSANSTALT FUER LEBENSMITTELCHEMIE, LICHTENBERGSTRASSE 4, D-8046 GARCHING, BUNDESREPUBLIK DEUTSCHLAND.
SO Z LEBENSM-UNTERS -FORSCH, (1984) 178 (4), 260-265.
CODEN: ZLUFAR. ISSN: 0044-3026.
FS BA; OLD
LA German
AB After extraction, methylation of the free acids, trans esterification of the acyl lipids and enrichment by column chromatography, the monohydroxy fatty acid methyl esters (MH) in the form of their trimethylsilyl derivatives were gas chromatographically separated by a **thin film** capillary (GC)2 and identified by **mass spectrometry**. The quantitative **analysis** was performed with an internal standard. Positional and geometric isomers of the MH were separated by (GC)2 to the extent, that the unsaturated fatty acid which was the precursor of the MH could be evaluated. A differentiation between autoxidation and photosensitized oxidation was possible. The procedure was tested by **analysis** of parboiled peas, rice, tomato powders and potato flakes. The concentration of the MH increases depending on the conditions of processing and storage. Parboiled peas contained MH which were formed by photosensitized oxidation. During storage of parboiled rice, oleic acid and linoleic acid autoxidize to a significant extent.
IT Miscellaneous Descriptors
PEA RICE TOMATO POTATO GAS CHROMATOGRAPHY **MASS SPECTROMETRY** PROCESSING STORAGE PAR BOILING

L13 ANSWER 25 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1983:286383 BIOSIS
DN BA76:43875
TI A **MASS SPECTROMETRIC** TECHNIQUE FOR THE DETERMINATION OF GAS AND VAPOR PERMEABILITIES OF **THIN** PHARMACEUTICAL **FILMS**.
AU PRATER D A; MEAKIN B J; WILDE J S
CS SCH. PHARMACY AND PHARMACOLOGY, UNIV. BATH, BATH, BA2 7AY, ENGLAND.
SO INT J PHARM TECHNOL PROD MANUF, (1982) 3 (2), 33-41.
CODEN: IPTMDN. ISSN: 0260-6267.
FS BA; OLD
LA English
AB The design, detailed construction and evaluation of a new system for studying the gas and vapor permeability of tablet film coats were

described. It is pertinent to the evaluation of packaging media. The apparatus consists of a stainless steel permeability cell housed in a temperature-controlled air cabinet (30.degree. .+-. 0.1.degree.). **Samples** of gas from the receptor compartment are withdrawn by means of a gas-tight syringe fitted with a valve injected into a **mass spectrometer** analyzing system based on a V.G. Micromass 2; this allows quantitative detection of individual species below atomic mass 60 in a gas mixture. Log-log calibration plots for O2 in the presence of N2 were linear over the 3 decade range 50-50,000 ppm and normal calibration plots were linear over the working range 50-1000 ppm O2 in N2, the relative SD of the slopes always being less than 2.1%. Six replicate calibration plots showed a slight day-to-day variation which was significant at the 5% level; repeated calibrations on any one day were not significantly different. Daily calibration was therefore carried out. Removal of individual **samples** from the permeability cell permitted the ingress of a small amount of extraneous O2 into the receptor compartment. Experiments showed this to be reproducible for each **sample** taken, and the measured O2 concentration could be readily corrected for this error. Barrer plots were used to detemine the O2 permeability coefficients at 30.degree. for a **sample** of polyethylene film and hydroxypropylmethyl cellulose [HPMC] films, formed from 5% w/v [wt/vol] aqueous Pharmacoat 606. The O2 permeability coefficient for the polyethylene **sample** was 3.12 .times. 10-12 m2 s-1 compared with the manufacturer's value of 3.3 .times. 10-12 m2 s-1. The mean O2 permeability for the HPMC films was 8.3 .times. 10-13 m2 s-1, and the steady-state transport rate was inversely proportional to film thickness over the range 17-55 .mu.m in accordance with standard diffusion theory.

L13 ANSWER 26 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1981:251363 BIOSIS
DN BA72:36347
TI SURFACE SPECTROSCOPIC STUDIES OF AVCOTHANE.
AU GRAHAM S W; HERCULES D M
CS DEP. CHEM., UNIV. PITTS., PITTSBURGH, PA. 15260.
SO J BIOMED MATER RES, (1981) 15 (3), 349-362.
CODEN: JBMRBG. ISSN: 0021-9304.
FS BA; OLD
LA English
AB Avcothane is a commercially available copolymer of polyether, polyurethane and polydimethylsiloxane; it is used primarily in aortic balloon pumps. The pumps consist of 3 segments which are fused to form the balloon. The surfaces, inside and outside, of the 3 balloon pump sections are characterized. By using X-ray photoelectron spectroscopy (ESCA), ion scattering spectroscopy (ISS) and secondary ion **mass spectrometry** (SIMS) a detailed **analysis** of the Avcothane surfaces can be performed and comparisons between various surfaces made. Previous reports of ESCA and Auger electron spectroscopy (AES) measurements of Avcothane are compared and presented. SIMS and ISS are useful analytical tools for studying polymeric biomaterials because these techniques are usually more surface sensitive than ESCA or AES. SIMS and ISS data indicate that a **thin** fluorine-rich **film** (probably a fluorocarbon polymer) is present on the Avcothane surface. Signals from the fluorine-rich layer are more intense from the inside of the balloon pump and the intensity generally decreases from top to bottom. The outside sections of the aortic balloon pump show the presence of fluorine, but the signals are less intense than from the inside. One possible explanation for the fluorine-rich layer is that a fluorine-containing compound is deposited on the balloon pump during molding and preparation. Another possibility is that the layer is

deposited during preparation of the Avcothane itself, but is essentially removed from the outside during sterilization.

IT Miscellaneous Descriptors
AORTIC BALLOON PUMP FLUORINE X-RAY POLY URETHANE POLY ETHER POLY DI METHYL SILOXANE

RN 7782-41-4 (FLUORINE)

L13 ANSWER 27 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1981:133206 BIOSIS
DN BA71:3198
TI MEASURING CALCIUM UPTAKE AND RELEASE BY INVERTEBRATE ASTACUS-LEPTODACTYLUS PHOTO RECEPTOR CELLS BY LASER MICRO PROBE **MASS SPECTROSCOPY**.
AU SCHROEDER W; FRINGS D; STIEVE H
CS INST. NEUROBIOL., KERNFORSCHUNGSANLAGE JUELICH GMBH, P.O. BOX 1913, 5170 JUELICH, W. GER.
SO SCANNING ELECTRON MICROSC, (1980) 1980 (2), 647-654,606.
CODEN: SEMYBL. ISSN: 0586-5581.
FS BA; OLD
LA English
AB Electroretinogram (ERG) of isolated crayfish retinas in salines differing in their Ca2+ concentration were recorded to monitor changes in the ERG induced by changes in the extracellular Ca2+ concentration. Laser microprobe **mass spectroscopy** and EM of shock-frozen and chemically fixed retinas were used to analyze the distribution of Ca in the photoreceptor cells. For quantitative **analysis** a new standardization procedure using vacuum deposition onto the specimen of **thin films** as an internal standard was developed. For the 1st time stable isotopes were used in microbeam **analysis** allowing direct measurements of Ca transport and metabolism on the cellular level. The major portion of Ca was found in the black distal shielding pigment granules (DP) within the retinular photoreceptor cells. Untreated retinas and retinas preincubated in physiological saline (with 10 mmol/l Ca2+) contained up to 100 mmol/l Ca in the DP, while in DP-free places within the same cell Ca was as low as < 40 .mu.mol/l. If the Ca-concentration of the saline was increased (decreased), a rise (fall) of Ca in the DP was observed. Careful Ca-depletion of the DP under ERG control allowed removal of an estimated 60-70% of the 40Ca originally present and refilling with 44Ca. The maximum amplitude of the ERG-response decreased under these conditions to 50% in low-Ca saline, but could be reestablished to some 70% in physiological saline containing 44Ca. In the living cell the DP acts as a Ca store, possibly regulating the intracellular and/or extracellular Ca level.

IT Miscellaneous Descriptors
ELECTRO RETINOGRAM ELECTRON MICROSCOPY

RN 7440-70-2 (CALCIUM)

L13 ANSWER 28 OF 30 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1979:156810 BIOSIS
DN BA67:36810
TI PHOTO DECOMPOSITION OF A HERBICIDE BUTACHLOR.
AU CHEN Y-L; CHEN C-C
CS DEP. AGRIC. CHEM., NATL. TAIWAN UNIV., TAIPEI, TAIWAN.
SO J PESTIC SCI (NIHON NOYAKUGAKU KAISHI), (1978) 3 (2), 143-148.
CODEN: NNGADV. ISSN: 0385-1559.
FS BA; OLD
LA English
AB Photodecomposition of the herbicide, butachlor [2-chloro-2',6'-diethyl-N-(butoxymethyl)acetanilide, Machete], as **thin film** on glass under UV light was very fast. Half-life was 1.5 h under experimental

AND DI BENZO FURANS.
AU BUSER H-R
SO ANAL CHEM, (1976) 48 (11), 1553-1557.
CODEN: ANCHAM. ISSN: 0003-2700.
FS BA; OLD
LA Unavailable
AB Glass capillary columns with different stationary phases (OV-101, OV-17 and Silar 10c) were used to study the separation of polychlorinated dibenzo-p-dioxins (PCDD) and dibenzofurans (PCDF). **Thin-film**, narrow bore glass capillary columns (22 m .times. 0.3-mm inside diameter) allowed lower operating temperatures (205-225.degree. C) and showed greatly increased separation efficiencies compared to conventional packed columns. Electron capture detection was used for **analysis** of these hazardous compounds in chlorinated phenols. **Sample** introduction was effected by an isothermal splitless injection technique with a high-boiling solvent. Peak identifications were made by **mass spectrometric** analyses. [Chlorinated phenols, used extensively in industry and agriculture, contain a variety of toxic contaminants.]
IT Miscellaneous Descriptors
TOXICITY MASS SPECTROPHOTOMETRY
RN 132-64-9D (DIBENZOFURANS)
262-12-4D (DIBENZO-P-DIOXINS)

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